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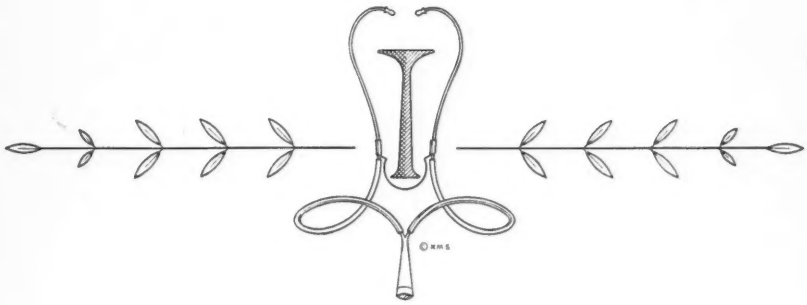

SEPTEMBER 1936

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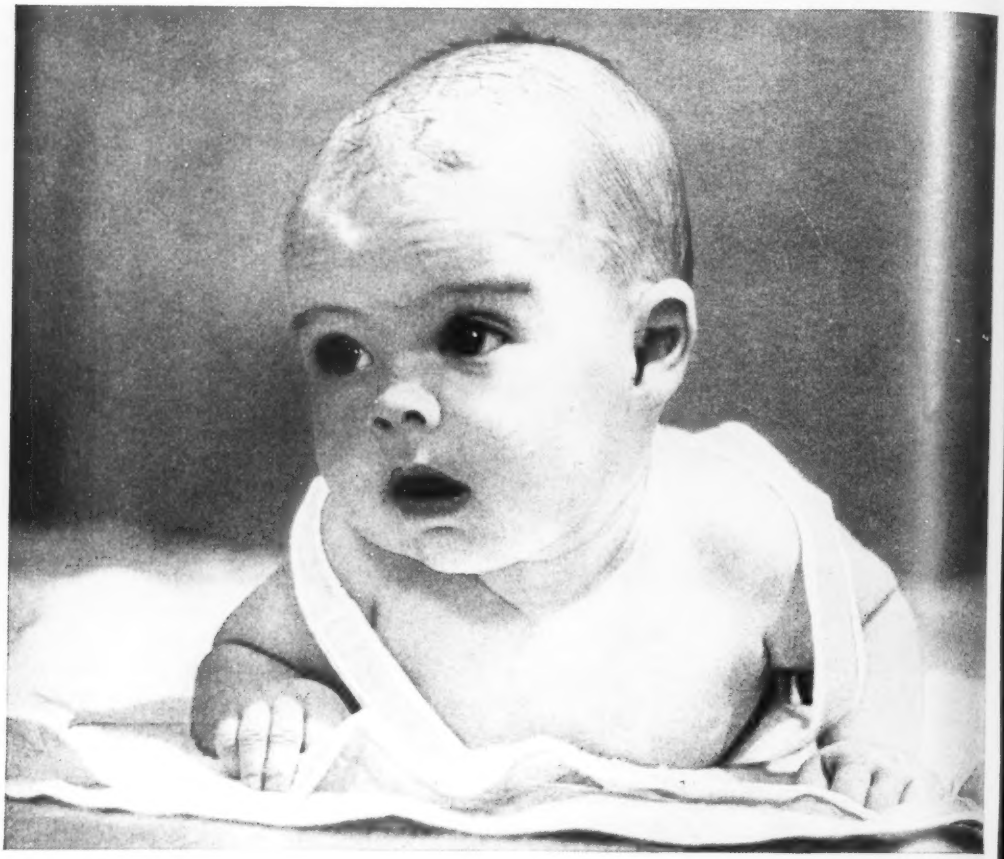

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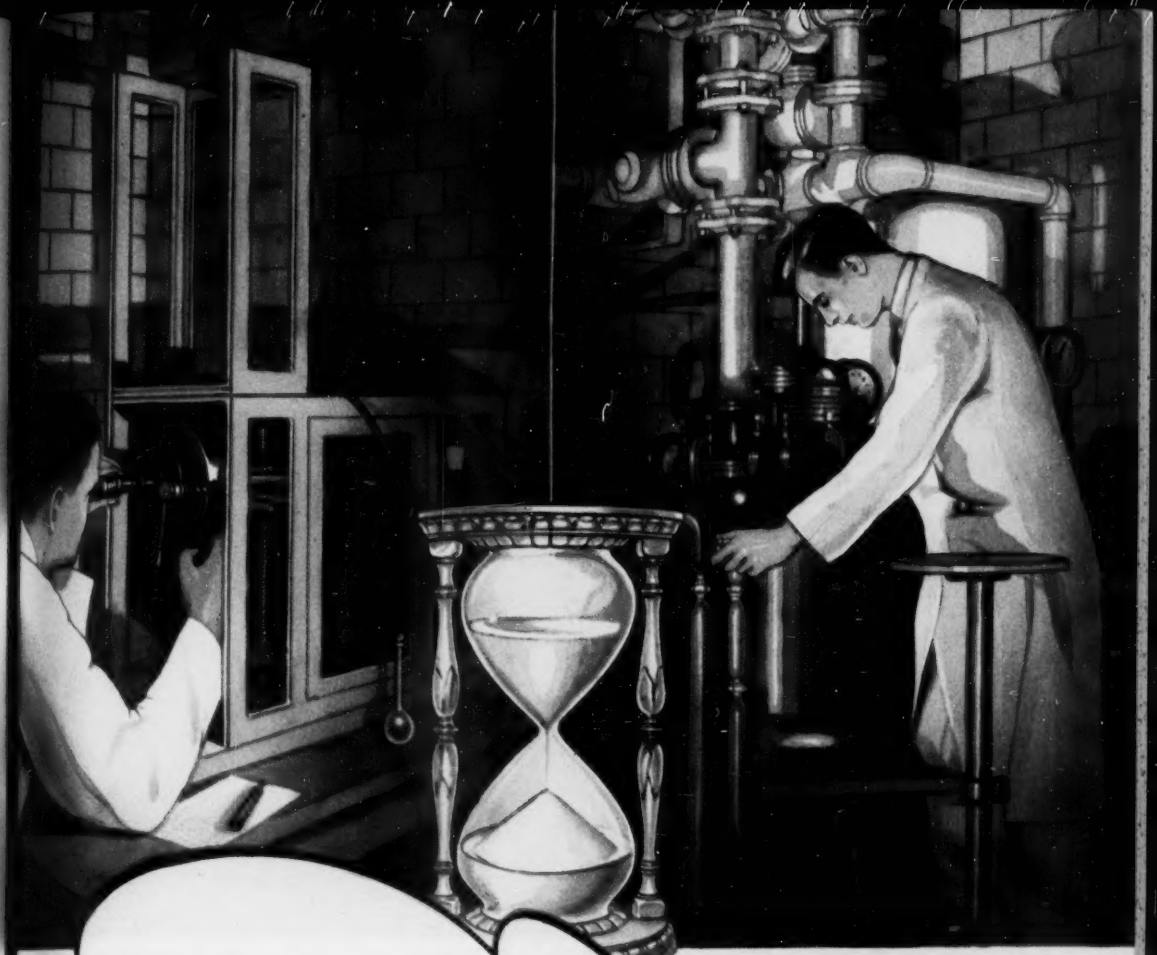

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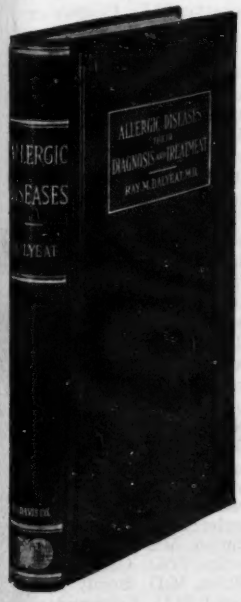

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BY

RAY M. BALYEAT, M.A., M.D., F.A.C.P.

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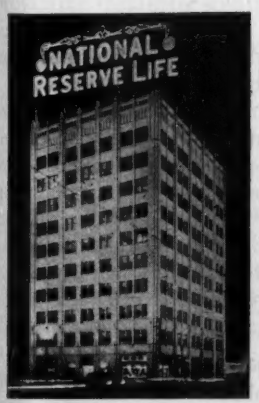

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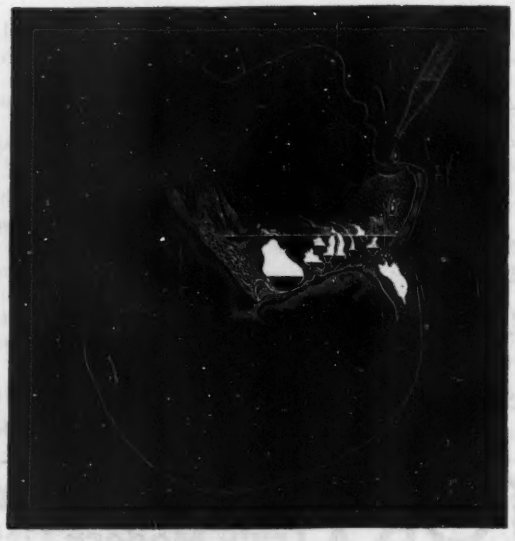

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THE CLINICAL USE OF INSULIN WITH PROTAMINE BUFFER
(Protamine Insulinate)

HOWARD E. MARCHBANKS, M.D.
FLORA ACTON, B.S., M.S.

Pittsburg, Kansas

As early as April 13, 1929, Leyton[1] reported the advantage of the administration of insulin in something that would delay the action so that the blood sugar would be lowered more gradually.

Hagedorn[2] and his co-workers have been experimenting with an insulin compound, sparingly soluble in tissue fluid, for several years and have found that a compound of insulin and nucleic acid had a more acid isoelectric zone than insulin itself. An experiment was made in which the reaction of the protamine insulinate solution was adjusted before injection to pH 7.3, whereby the protamine insulinate is precipitated.

As a result of the compound being injected as a suspension, the deposit in the subcutaneous tissue consists of a fluid of practically constant insulin concentration, from which the absorption takes place, and a steadily diminishing amount of solid particles. In this way a prolongation of the time of absorption was found to be present. They used several protamines before they finally found one prepared from the sperm of Salmo iridius, and thereafter used it in clinical experiments. During a period of two years they treated about eighty-five patients with protamine insulinate in the Steno Memorial Hospital.

During their hospital stay, their routine for blood sugars was five times daily. Fasting 7:00 a. m., 11:00 a. m., 2:00 p. m., and 10:00 p. m. The insulin was injected usually at 8:00 a. m. and 6:00 p. m. Their determinations were made on capillary blood by titration method according to the ferri-cyanide method.

Their patients were given a diet of about 2,300 calories individually modified. The diet contained about 100 grams carbohydrate, 70 grams of protein, the balance fat. They observed no ill effects. The injections were painless, no local reactions resulted, and protein reactions did not occur. They found the results the same in children as in adults. In coma where one wants the action to be immediate, the ordinary insulin should be used. They were able to relieve all patients completely of feelings of uneasiness due to acidosis or high blood sugar, without giving more than two doses daily.

The hypoglycemic reactions that did occur came on so gradually that the patient was able to provide for it. They found it best in most cases to give regular insulin for the morning dose, and protamine insulate for the evening dose. In a few cases they used protamine insulinate both morning and evening, in which case they gave the doses at 8:00 a. m. and 8:00 p. m.

Root[3] and his group at the New Deaconess Hospital in Joslin's Clinic, have worked with this new preparation obtained from Dr. Hagedorn in vials containing five c.c. of Danish Leo Insulin of U 40 strength. They add to this five c.c. of insulin, one c.c. of a solution containing the protamine and sodium phosphate. The vial is shaken before each withdrawal of insulin.

At the time they made their report, they had treated fifteen patients with the protamine insulinate. Joslin, at the meeting of the American College of Physicians, in Detroit this year, added a great many more

Editor's Note: The Journal staff joins all other members in regretting the untimely death on August 7 of its associate editor, Dr. Howard E. Marchbanks. The above paper, which was written by Dr. Marchbanks shortly before his death, is published for the excellent scientific information it contains and as a tribute to his memory.

to their list, so they now have a goodly number taking the protamine insulinate at home. Dr. Joslin said that now the mothers of the younger diabetics could get rest at night, since they need not worry about a hypoglycemic reaction coming on in the night.

In many of their cases they have been able to get normal fasting blood sugars with comparatively small doses of insulin, ie. twenty-eight units of old insulin and twenty-eight units of new insulin on diets of C 201, P 80, F 97.

We have been able to get blood sugars with a much flatter curve, but the fasting blood sugars have thus far not been normal for many days in succession. The diet used in our case which we will report somewhat in detail was C 164, P 74, F 87.

Many methods of giving the protamine insulinate have been tried by the various workers. Root has given to some patients the protamine insulinate from sixty to ninety minutes before meals, and they think this is perhaps desirable in some cases.

In a personal communication from Dr. F. B. Peck[4], of Eli Lilly and Company, he states that from the reports received, there seems to be two general methods of using this preparation. One group gives a large dose late in the afternoon or before supper, and maintains the curve throughout the day, if necessary, by the use of one or two small doses of ordinary insulin. The other group is using a large dose of insulin-protamine before breakfast, giving practically the entire amount of insulin required during the day at this time.

He also states that further information on the stability of insulin-protamine is now available. It may be safely used for as long as thirty days following admixture. Joslin stated this last fact at Detroit, but added that it should be kept in an ice box.

The patient whom we wish to discuss, W. W. V.—a fourteen-year-old high school student, was first seen by me on February 22, 1931. At that time he was nine years of age, and sugar had been discovered in his urine by Dr. Theis of Arma, Kansas, who had referred him to me for treatment.

His history was typical of early diabetes mellitus with polyuria and polydipsia. His appetite was not enormous, although he ate several cookies each day and two or three apples as a rule, besides his usual meals. He was at the head of his class in school, although his deportment was a little low. He had been taking music outside of school hours. His mother and father and two younger brothers were living and well. No diabetes in the family on either side of which they knew. Since that time he has been on a weighed diet and insulin. He has felt well generally, and has gained in height and weight. He has carried full work at school, is still leading his class, does a lot of hunting and fishing, and some basketball.

His fasting blood sugar remained well under 200 mg. per 100 c.c. of blood, until in the early part of 1935 it began to go up; his morning blood sugar has been constantly above 300, and at times as high as 500 milligrams. On one occasion, however, January 11, 1936, we did an hourly blood sugar on his regular diet and insulin, and found it ranged from the lowest at 5:10 p. m. of 67 mg., to the highest of 294 mg. at 1:20 in the afternoon.

His mother has tested his urine three times daily all these years, and has varied his insulin according to the reaction. He took four doses of insulin daily; thirty units before breakfast, seventeen before lunch, seventeen before dinner, and from nine to eleven at bed time. This routine varied a little from time to time. For the first two years he had a diet of about C 100, P 70, and F 150; but since 1933, he has had a diet of about C 164, P 74, F 87. This has varied somewhat. For a while he took as much as 200 grams of carbohydrate, but never over 100 grams of fat, and usually about seventy grams of fat. He had numerous hypoglycemic reactions which worried his mother so much, that her sleep was constantly broken at night by fear of them.

After hearing of the new protamine insulin, we decided to use it on this patient if he cared to take it. Eli Lilly and Company sent me a supply of protamine sufficient to start with, and said we could have enough to carry on until the product was ready for distribution. His chart is shown in Figure I. It will be noted that we took five blood sugar readings each day; namely, at 7:00 a. m., 11:00 a. m., 2:00 p. m., 5:00 p. m., and 9:00 p. m. His fasting blood sugar on two occasions during the observation period, was 500 mg. for 100 c.c. of blood. He was taking seventy-two units of regular insulin daily, divided into four doses in the beginning, as is noted on the chart.

During this three day period, the blood sugar ranged from 86 mg. to 500 mg. He was then put on thirty-four units of regular insulin in

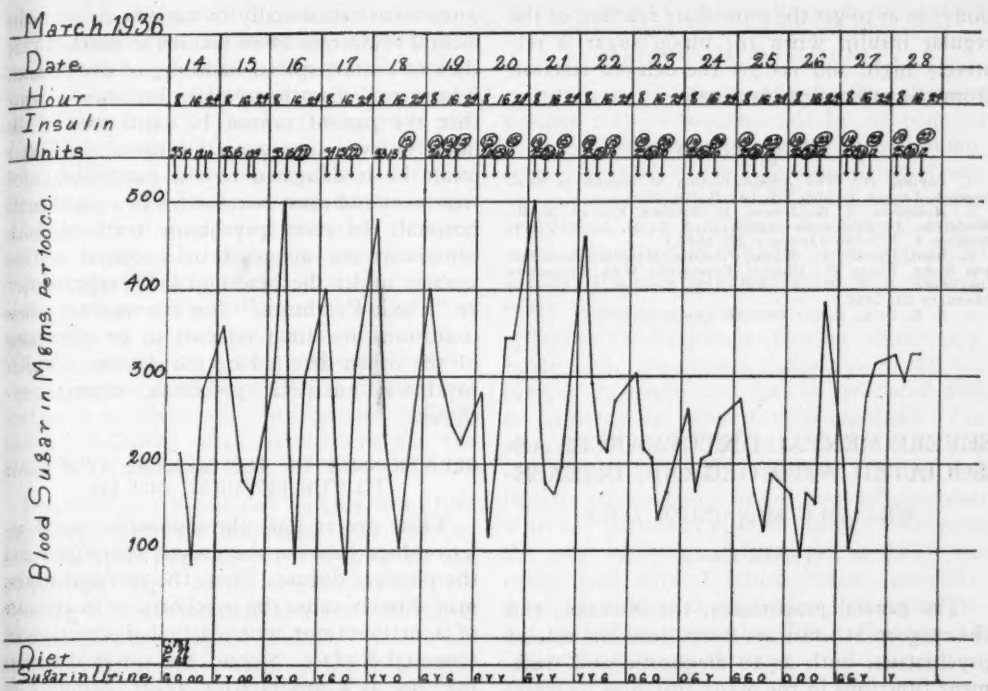

Figure 1. Master W. W. V., fourteen years of age had had diabetes for five years. The first two days, March 14, and 15, show blood sugar curves when regular insulin was used; the remaining days show the effect of the combination of regular insulin and protamine insulinate. It will be noted that the best results were obtained when the dose was divided; part being regular insulin, given in one arm, the remainder protamine insulinate, given in the opposite arm.

The high blood sugar on March 26 was obtained after the patient had eaten pop corn at a picture show. Benedict's test was used for detection of sugar in urine; G representing only a trace, Y a small amount, and O none. Doses of protamine insulinate are enclosed in circles.

the a. m., thirteen regular at noon, and twenty-two protamine at night. We continued to get a low blood sugar with symptoms of shock at 5:00 p. m., so we decided to divide the morning dose into twenty-five units regular and ten units protamine insulinate, and also change the noon dose to protamine. The evening dose was likewise divided into eight units regular and fifteen units protamine, and later to as high as twelve units regular and twenty-two units protamine.

Since the patient has gone home, he has continued to take the insulin in about this way. We did, however, on April 4, divide the noon dose into ten units regular insulin and ten protamine, so that now he is getting forty-seven units regular insulin, and forty-two units of protamine insulinate daily. The curve gradually flattened out somewhat, but it is not yet what we want. We realize that this is a large amount of insulin, but we believe that it will be possible before long to reduce the amount, both of the regular insulin, and protamine insulinate, as he will be able to spend more time in the open. He does not mind the two shots at a time at present, but one can imagine that it will soon become a factor to consider.

We hope to be able to overcome this extra shot by gradually increasing one and decreasing the other until he is taking all of regular insulin at one time, and all of protamine insulinate at another, with perhaps the third dose divided. This patient is a severe diabetic who experienced frequent attacks of insulin shock, and we believe it is in this type of patient that the new insulin will prove of value.

SUMMARY

We have reviewed somewhat the general nature of protamine insulinate, as described by Hagedorn and his associates, and by Root and his co-workers at the New Deaconess Hospital, and by Joslin.

We have presented a single case which demonstrates the advisability of dividing the insulin on some occasions, giving regular insulin in one leg or arm, and protamine insulinate at the same time in a different part of the

body, so as to get the immediate reaction of the regular insulin when the blood sugar is relatively high, and yet get the delayed reaction from the protamine insulinate.

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SEVERE MENTAL DISTURBANCES ASSOCIATED WITH ORGANIC DISEASE

WILLIAM C. MENNINGER, M.D.*

Topeka, Kansas

The general practitioner, the internist, and the surgeon at times are forced into the role of psychiatrist, both as to diagnostic and treatment functions in the many instances of severe mental disturbance that occur either prior to, with, or following organic disease. It is my purpose in this paper to review briefly only the more severe types of mental disturbances that occur with physical illnesses, omitting any discussion of a great number of individuals who come to the general practitioner or specialist complaining of physical symptoms, but in whom no organic pathology can be demonstrated.

In understanding the toxic mental states it is most helpful to regard disease as a reaction of the entire individual, namely, a psycho-somatic reaction, in which always there are varying degrees of both psychological and physical response. Certain types of physical illnesses are usually uncomplicated by any marked mental reactions, but, on the other hand, severe mental symptoms occasionally become an important part of the total clinical picture. Consequently, it is essential that the general practitioner recognize the importance as well as the nature of these mental symptoms, and their relationship to the physical condition that exists.

While most standard textbooks of medicine indicate that delirium or other mental symptoms occur occasionally in various diseases, the mental symptoms often become so marked that they necessitate special handling of the patient. The mental disturbance often becomes so acute that the patient cannot be cared for in the home or even in a general hospital, and as a result he is delegated to the psychiatrist for treatment and must be cared for in a psychiatric hospital. In every psychiatric textbook such conditions are discussed in a special section usually under the heading of "Symptomatic" or "Toxic Psychoses." For convenience, these conditions are often referred to by the name of the organ affected or the disease: Cardiac psychosis, puerperal psychosis, uremic psychosis.

RELATIONSHIP OF THE MENTAL SYMPTOMS TO THE PHYSICAL DISEASE

There are at least three possible casual relationships between the mental symptoms and the physical disease. First, the physical illness may directly cause the psychosis, as in the case of a brain tumor where actual destruction of tissue takes place. Second, the physical disease may act as a precipitating agent, bringing to light a mental disturbance in a predisposed individual. Third, the physical disease may alter, or apparently even supplant, an existing mental maladjustment; for instance, one occasionally sees the symptoms of a severe cardiac disease recede on the appearance of mental symptoms.

The time at which the mental symptoms develop also varies widely: They may appear as the first and conspicuous symptoms of what subsequently develops as an organic disease of some organ or system of the body other than the central nervous system; the mental symptoms may parallel the course of the physical symptoms as being equally severe, and clear as the physical condition improves; or, the mental picture may exist far beyond the duration of the physical disease and frequently beyond a period when either a toxin or poison can be demonstrated. Occasionally, the mental disturbance appears during defervescence, and rarely, a number of weeks afterward.

CHARACTERISTICS OF THE MENTAL REACTION

Delirium is by far the most common mental picture associated with acute organic disease. Although this term is usually applied only to acute febrile conditions, the mental picture often is indistinguishable from a psychotic reaction

*Read at the Post-Graduate Course in Neuropsychiatry at The Menninger Clinic April 24, 1936.

associated with an afebrile condition, or even a chronic toxic state. Delirium has been defined variously by psychiatrists: Kraepelin described it as a "Clouding of consciousness, incoherence, and hallucinations." Bonhoeffer stated in part that "The essential alterations in the fever-drug deliria are a weakness of the train of thought . . . and retention and attention disorders . . . " Bleuler stated that the "Primary defect . . . is in the faculty to combine sense impressions." Hoch defined it as "Complete disorientation, with variations in the level of consciousness, incoherence, and speech defect." We may summarize it as a syndrome consisting of clouding of consciousness, disorientation, confusion of thinking, illusions and hallucinations, followed often by amnesia for the period of its existence.

Delirium may be divided roughly into three stages in which the individual may develop only the first stage or may progress to the severe third stage. In the first stage there is a clouding of consciousness and the individual is in a somewhat dream-like state; if left to his own devices he may wander in his speech and thought, but by merely speaking to him he can be recalled to reality. In the second stage there is a greater dulling of the perceptive abilities and the individual has difficulty in understanding or grasping the actual situation. In the third stage he may develop hallucinations (usually visual) and very often will misidentify those around him. Mistaken ideas or delusions are present but are usually fleeting in character. The emotional picture varies from apathy and depression to anxiety and excitement.

The term "delirium" can be applied with equal correctness to both the febrile and afebrile mental states. In the latter conditions the mental picture differs in no quantitative degree from that of acute deliria. It is primarily a disturbance in perception: The patient is confused, is disoriented as to those about him or his location; his receptive abilities are disturbed and his memory is fleeting. It is most important to recognize that the mental picture is unrelated to the special organ affected or to the toxin, and thus, that there is no typical or constant picture seen with any particular type of physical disease. The mental symptoms depend primarily upon the individual personality makeup.

SEVERE MENTAL REACTIONS PRODUCED BY TOXINS AS THE DIRECT OR INDIRECT RESULT OF INFECTION

Infectious Diseases: Any of the infectious diseases may be accompanied by delirium or they may produce more lasting mental symptoms. As in all of the symptomatic psychoses, an infectious disease may create the mental symptoms, may precipitate the mental symptoms in predisposed subjects, or may augment or alter the mental symptoms where they already exist.

Influenza, diphtheria, measles, chickenpox, scarlet fever, pneumonia, malaria, or in fact any toxic or infectious state may be associated with or followed by, severe mental reactions. The mental symptoms that do occur often develop into typical clinical psychiatric entities but there is no constancy of any type of psychosis with any particular type of disease. Following the great epidemic of influenza in 1918 one could find typical schizophrenic, paranoid, manic excitement, or depression pictures following an influenza attack. The following case illustrates such an instance:

> An unmarried nurse, aged thirty-five, was previously described as egotistical, selfish, unpopular, and seclusive. She contracted influenza and had a fever of 104 degrees which disappeared by the fifth day. She seemed normal for a few days after the fever subsided but by the tenth day after the onset she was psychotic, became mute, rigid, at times extremely talkative, feared she was going to die, insisting she still had influenza and that she had been accursed. On the eleventh day she became violent, becoming destructive. The twelfth day she was admitted to the psychiatric hospital where she remained essentially unchanged for three months. A diagnosis was made of catatonic schizophrenia.

Much more difficult to diagnose, both as to the physical disease and the casual relationship to the mental symptoms, are those instances in which the type of infection cannot be definitely ascertained. In the following case we were never able to definitely determine the type of infection present and it was certainly not the relatively simple diagnostic problem presented by the delirium associated with a specific infectious disease:

> The patient was a forty-four year old housewife: at the age of twenty-nine following an attack of influenza she was for a time very talkative and restless with what was described as a "nervous breakdown." At the age of thirty-seven, following her mother's death, she had a second "nervous breakdown" in which she had choking sensations, had

difficulty in breathing, and was "very nervous." The present illness was associated with an illness of her father to whom she had been devoting much time. She could not rest and became overactive; she talked excessively, became argumentative, and began talking a great deal about religion, saying that she had had a "divine vision." She had threatened suicide and was brought to the hospital under the influence of morphine.

It was discovered that she had gonorrheal vaginitis which seemed of minor importance, and she appeared to have a great deal of pain in her abdomen. She frequently became cyanotic, developed a diarrhea up to fifteen defecations a day, and ran a temperature up to 104 degrees. At times she showed marked rigidity of the neck. At times she was acutely delirious. The blood and spinal fluid were normal. She developed an erythematous rash over her body; her mouth became sore and her gums bled. She complained of pains in her joints, and despite a tremendous amount of sedative medication could not sleep. Her temperature remained high and she developed edema of the extremities. This whole process continued for a period of a month; we were not able to locate any definite organic etiology, and yet the whole picture was definitely a toxic psychosis. The mental condition gradually cleared up and she was discharged recovered, seven weeks after admission.

The role played by focal infections in the production of mental symptoms has been the subject of much research, and a few adherents place great importance on this cause. The majority of psychiatrists believe that focal infections such as an abscessed tooth or chronic tonsillar infection may, in some instances by a sufficient physiological burden, produce mental symptoms in a predisposed individual. In every case, it is advisable to clear up obvious foci of infection, but, on the other hand, it is unwarranted and inadvisable to remove tonsils or teeth in a mentally ill patient when there is no definite evidence of their contributing influence.

SEVERE MENTAL REACTIONS FROM ENDOGENOUS CAUSES OTHER THAN INFECTIOUS DISEASE

Physical Exhaustion: Mental symptoms undoubtedly occur from extreme physical exertion, starvation, or from wasting disease. They may occur following an infection in which the individual has become rundown, even though the infection itself may have subsided. The popular conception that overwork causes mental breakdowns is probably erroneous. In those instances where overwork has occurred it is probably more correct to assume that the overwork itself was an early symptom of the failure on the part of the individual to adjust to his situation.

Cardio-renal Disease: In a small percentage of cases the combination of a diseased heart and kidney may produce mental symptoms. Again, these are usually disturbances of perception with impairment of memory and a delirium differing little from that associated with febrile illness.

A woman of sixty-two years became confined to her bed following an attack of lumbago. She was very restless and after about three days became delirious; she did a lot of laughing and senseless talking, but with this the pain apparently disappeared. The heart showed evidence of mild carditis; the blood pressure was 160/80; there was an increase of nitrogen retention in the blood, and a great deal of albumin and some casts in the urine.

Cardiac Psychoses: Severe mental reactions associated with heart disease most commonly take the form of depression and anxiety associated with ideas of suspicion and fear. The cause has been ascribed to an anemia of the brain. Such mental reactions, are most often associated with cardiac decompensation, in people over forty-five years of age who show arterial changes. Not always, but frequently, the blood pressure is elevated beyond 170. One must consider the complicating factor of the medications used in such cases, namely, digitalis and quinidin, which sometimes alone are known to produce mental symptoms. The treatment for such cases should include the cessation of any questionably toxic drugs, isolation from visitors, and even from the family, and sufficient sedation to obtain rest in bed.

A man sixty-one years of age had for many years had an aortic lesion with recurrent periods of decompensation. Ten days before he was seen he became confused and delirious. He was disoriented, talked of "going to a trial," believed that people were watching him through the windows and that he was being talked about. His heart was enlarged, the blood pressure was 180/110 and there was evidence of early decompensation. Despite intensive treatment he continued to fail and died about two weeks after he first became ill.

Kidney Disease: Uremia is often accompanied by mental changes. In the early stages the individual may be excited with a varied picture of delusions, often typically delirious. If the physical illness progresses the individual usually becomes apathetic, indifferent, and finally comatose. Convulsions are a frequent part of the picture. The treatment consists in the use of the Karell diet, salt restriction, isolation for the sake of excluding external stimu-

lation, sedation, and a high elimination by forcing fluids and ample catharsis.

The illness of a forty-six year old woman whose past history was negative began with concern about her daughter's pregnancy. She became paranoid toward her husband about the daughter's pregnancy and six months after she was first seen the child was born. During the preparation for the event she seemed to faint; when she regained consciousness she was mildly delirious and remained so for five days. She improved for a week but then became rambling in her talk and ideas, and gradually developed a severe delirium. She complained of severe headache and of pain in the abdomen and rectum. She developed nearly complete anuria. Her blood pressure was 115/75. She was alternately drowsy and talkative, speaking with a muttered thickened speech with fleeting hallucinations and delusions. The blood urea nitrogen was 45.7 mgm. (normal 10 to 18 mgm.) The urine showed much albumin and a high specific gravity. With intensive care she recovered.

Neoplastic Disease: Mental symptoms may mask neoplasms of various organs such as cancer of the pancreas, lung, esophagus, stomach, or bladder, and are very frequently associated with various stages of cancerous growth. It is most important to recognize that the mental symptoms may be the first and conspicuous symptoms of a new growth, as is well illustrated in the following case of cancer of the pancreas described by Yaskin:

A man of fifty-six, a merchant, had a negative past history and was well adjusted socially and economically. His illness began with weakness, fatigability, anorexia, and insomnia. Symptoms developed gradually along with a feeling of depression and crying spells. He had a feeling of anxiety and imminent danger to his life. There were no gastro-intestinal symptoms except anorexia and no pain except vague periodic backache. The general physical and neurological examinations were negative. The diagnosis of neurasthenia and spondylitis was made. Four months later the patient began to vomit and was nauseated and the mental symptoms were aggravated. Following a fluoroscopic examination of the gastrointestinal tract a diagnosis of cancer of the pancreas was made; this was verified at operation.

Endocrine Disturbances: There is no typical psychosis in any type of endocrine disturbance. In a previous paper I have described at some length the various personality deviations associated with endocrine disorders. Briefly, I may review that in pituitary disorders one frequently sees mental retardation associated with the pre-adolescent adiposogenital dystrophy. A schizophrenic reaction is often associated with the post-adolescent hypofunction of the posterior lobe. In both types of illness pituitary therapy given hypodermically is often effective.

In the thyroid disorders severe reactions are infrequent although mild reactions are common. In hyperthyroidism there is no constant set of mental symptoms, though in myxedema apathy and indifference progressing to dementia is often seen.

Hypoglycemia: In severe diabetes one observes depression, sluggish mental activity, and diminished volitional activities; rarely does one find a toxic psychosis directly associated with the diabetes.

This patient was a man aged fifty-seven; he had a college education and was unhappily married. He was found to have diabetes seven years previous to his examination but had felt well and had taken no treatment. He developed leg pains and came for treatment. A glucose tolerance showed very high blood sugar levels: fasting 331 mgm., one hour 647 mgm., two hours 579 mgm., three hours 628 mgm., four hours 524 mgm., and five hours 415 mgm. per 100 cc. He was treated with diet and insulin and his symptoms disappeared; he continued treatment for eighteen months but after five months of neglect then he reported with a gangrenous left toe. He was hospitalized but lived only two months. There was a slight extension of the gangrene, which then dried, but with some sloughing of the side of the foot. Despite insulin and diet, his blood sugar repeatedly fluctuated above normal, as high as 300 mgm. For approximately two weeks prior to his death he became very confused, and disoriented and expressed delusions chiefly concerning his clothing, that he had lost it, or that someone had stolen it a year ago. His remote memory remained fairly intact but his recent memory was very unreliable. The possibility of toxic absorption from the gangrenous area as the cause of his mental symptoms seemed unlikely to several physicians who saw him at this time. Except for the last two days he was afebrile. The day prior to his death his urine was free from sugar and acetone although his blood sugar mounted to 415.0 mgm. He developed pneumonia and died. Autopsy findings disclosed no brain changes except those of pneumonia and diabetes.

Hyperinsulinism: A persistent hypoglycemia (hyperinsulinism) is now recognized as a clinical entity, and is often associated with an acute confusional state.

A woman aged fifty complained of headaches of four days duration and dizziness of recent onset. She had had amenorrhea after a hysterectomy at forty-three. The headaches would disappear on lying down, but they gradually increased in severity until the patient was in almost constant severe pain. At times there was transitory confusion and inadequacy of thought. The day before she was hospitalized the patient started to talk but succeeded only in jabbering; however, this disturbance disappeared suddenly. The physical examination was

negative though there were minor neurological abnormalities. The initial fasting blood sugar was forty mgm. The patient acted "queerly" for several short periods, declaring that she was "going crazy," that there was something the matter with her head. Occasionally she was tearful and would kick her legs in the air. Subsequent blood sugar tests were very low; the patient responded promptly to small frequent feedings. Later a laparotomy was performed which revealed a marked cirrhosis of the liver, but no abnormality of the pancreas.

Tetany as well as adrenal tumor is occasionally associated with severe mental symptoms.

Pregnancy: It is desirable again to point out that pregnancy may cause or precipitate or aggravate a disordered mental state. The severe mental reactions are most likely to occur with the first pregnancy and often there is no toxic factor evident. Rarely one observes the Korsakoff syndrome in hyperemesis states in which there is confusion and delirium associated with polyneuritis. No consistent mental picture is observed in the so-called puerperal psychoses; about thirty per cent are toxic, and the remainder fall in the groups of schizophrenia, manicdepressive psychoses, or the psychoneuroses.

A young woman aged twenty-two who was the mother of a five year old child gave birth to a stillborn child at home. She had been under some stress during the pregnancy because of her husband's failure in business, but had shown no marked mental changes. She showed no interest in getting up after the confinement but complained vaguely of occasional headaches and gall-bladder distress. Six weeks after her confinement she was taken to a general hospital. After two weeks there she began to talk queerly, ate only if she were spoonfed and became sluggish in her responses. At this time she was transferred to the sanitarium. She began to act childish, repeated a question asked her rather than answering it: she gradually became mute and rigid, and had to be tubefed. She presented the typical picture of catatonic schizophrenia. She improved remarkably after about six weeks in the sanitarium and was discharged as recovered. She has continued to be well, now five years afterward.

SEVERE MENTAL REACTIONS FROM EXOGENOUS POISONS

Various drugs, some of them in common usage, may cause severe mental symptoms. The bromides often produce severe mental reactions characterized by excitement, confusion, agitation, and hallucinations. In the normal individual a test for bromides in the blood is negative. When the blood bromides amount to less than 100 mgm. per 100 cc. there are rarely symptoms; when the bromides are between 100 and 150 mgm. one may see mild confusion and depression; when the bromides are between 150 and 300 mgm. there is usually agitation, severe confusion, and hallucinations; when the bromides are over 300 mgm. one may see stupor and neurological signs. The treatment consists chiefly of the administration of sodium chloride by mouth of twenty to thirty grains three times a day with increased fluid intake and ample elimination.

A housewife aged fifty-nine who had auricular fibrillations had received forty-five grains of bromide per day for three or four years. She complained that there were bugs on her skin, and chickens and other animals in her bed. In addition to the auricular fibrillations she showed pitting edema over both ankles, nystagmoid jerkings of the eyes, tremor of the hands and absent abdominal reflexes. She was disoriented and had both visual and tactile hallucinations. Laboratory examination showed 180 mgm. of bromide per 100 cc.

Alcohol has long been recognized as a poison capable of producing severe and often irreparable mental pictures. One of the most difficult therapeutic problems is seen in the Krosakoff syndrome, illustrated in the following case.

A railroad telegrapher forty-six years of age had been drinking for about thirty years and drinking heavily for the last ten years, though this had never interfered with his work. Four months prior to admission to the hospital he began to have pain and weakness in his legs; his business efficiency was unimpaired. He became partially confined to his bed and about a month before admission developed a heart attack which has kept him confined to bed most of the time. Two weeks before he was hospitalized he began to show lapses of memory, mostly for recent casual conversation. He believed that his wife was losing her mind. On examination the patient showed a residual ataxic gait which made locomotion exceedingly difficult. The deep reflexes were asymmetrical and gross tremors were present; muscle power was diminished. The findings were indicative of mild peripheral polyneuritis.

The barbiturates may also produce mental reactions in susceptible individuals with the production of fever, confusion, agitation, and perhaps even stupor. Many other drugs including nicotine, cocain, quinidin, and morphine have all been reported as producing psychotic reactions.

Of the metals arsenic is by all means the most important because of its use in the treatment of syphilis. A great many reports have been published of the toxic effects of arsenic, and recently even tryparsamide has been indited as occasionally causing severe mental reactions. The treatment in such instances is limited to

the administration of sodium thiosulphate intravenously and continuous spinal drainage. Lead and mercury are also capable of producing delirious episodes.

Carbon monoxide frequently produces severe mental changes and it is extremely important to know that the individual may appear to have recovered from the immediate effects of the poison only to have the mental symptoms develop several days or weeks afterward. Characteristic of all monoxide mental reactions is confusion with amnesia; often a Korsakoff syndrome with neuritis and fabrications is produced.

A doctor, aged thirty-eight, had a history of two previous periods of depression, one of which lasted four months. Two years previously his wife died in childbirth and the child lived; he engaged a nurse to look after the child and became attached to her. As the affair progressed he became depressed and questionably attempted suicide by carbon monoxide poisoning by going to sleep in his car in the garage.

The clinical picture two weeks afterwards was a complete amnesia for the event and for subsequent events; he was unable to remember events from hour to hour as they happened during the day. He showed a neuritis of the right posterior femoral cutaneous nerve probably accompanied by sacral radiculitis with a consequent motor involvement. The neuritis very slowly improved but the mental condition remained essentially the same for several months.

SEVERE MENTAL REACTIONS WITH ORGANIC CENTRAL NERVOUS SYSTEM DISEASE

This group of illnesses are not usually regarded as symptomatic psychoses since the primary seat of damage is in the nervous system itself. Nevertheless, they all represent organic disease in which there are conspicuous mental changes. With perhaps three exceptions they all represent either destruction or degeneration of the brain or spinal cord tissue and include such disorders as tumors, cysts, neurosyphilis, cerebral arteriosclerosis, encephalitis of various types, and the degenerative diseases like Huntington's Chorea, paralysis agitans, and multiple sclerosis.

There are certain types of disease reactions in which the nervous system is involved only as a part of the process, with the disease expressing itself in other organ systems, of which we should mention two of the more common examples.

Pellagra: Approximately forty per cent of the cases of pellagra show some mental symptoms and approximately 7.5 per cent show psychotic reactions. In the cases showing severe mental symptoms one finds an axonal degeneration of the cortical nerve cells, and the process may affect the brain or the spinal cord, or both. The mental picture resembles that of the toxic psychoses either as an acute delirium or in some instances as a simple retardation. In all such cases, however, there are physical evidences present to make the diagnosis, specifically, the skin lesions, the "strawberry" tongue, and gastrointestinal symptoms. The treatment consists in giving the patient a high caloric diet with yeast, orange juice, tomato juice, and giving hydrochloric acid by mouth.

A retired Baptist minister sixty-seven years of age presented a previously normal history. Following the death of a sister and a series of religious disappointments he became depressed and the depression gradually increased. After six months he reached a stage where he felt that he was "eternally damned" and developed delusions of persecution. Physically, he showed the typical skin lesions of pellagra on his wrists and the "strawberry" tongue.

Pernicious Anemia: Severe mental reactions take place in this disease in about one per cent to three per cent of cases. They may occur early or late in the course of the illness, and show no definite relationship to the degree of the anemia. They may be present with or without severe spinal cord involvement. The mental picture varies, with some individuals showing a strong paranoid trend and others showing a conspicious picture of anxiety and depression, and still others a delirious, confused state. The mental picture, however, in itself, usually suggests its cause as an organic disturbance of cerebral function, surcharged on a predisposed personality.

With treatment the mental symptoms, and in some instances even the neurological symptoms, show a remarkable improvement. The treatment consists chiefly in the intramuscular injection of liver extract, beginning with three cc. two or three times weekly, and as improvement occurs reducing the injections to once in two weeks; they must be kept up indefinitely.

A man aged sixty-eight had over a period of six months become noticeably weak, complaining of shortness of breath, loss of appetite, and extreme weakness. No medical examinations had been made. He rather suddenly became irrational, accused his family of persecuting him, talked of being poisoned, and became quite agitated so that it required morphine to keep him quiet. Neurologically, he showed a typical picture of combined sclerosis with very marked paresis. He was unable to stand on

his feet and vibration sense was entirely absent below the waist line. The hemoglobin was thirty-six per cent, red blood count 3,200,000. On intensive liver diet and medication he improved so that in six weeks he had become quite rational and was able to walk out of the hospital. Three years later he was able to drive his car, felt well, and was mentally clear but was still taking liver.

THE MANAGEMENT OF DELIRIUM

The management of delirium is essentially the same as that of any acute excitement. No adequate treatment can be given in the home and one is often greatly handicapped even in the general hospital. Furthermore, the treatment depends on the nature of the existing organic disease for obviously a febrile toxic person must be treated differently than one with an afebrile delirium; consequently, one can only postulate generalities in management.

The General Management in the Hospital: There are three essential points in the care of the delirious state. First, all external stimuli in the form of visitors and unnecessary manipulations, should be eliminated; in other words, the patient should be isolated from his relatives and all unnecessary contacts with the external environment. Second, one must always consider the protection of the patient as well as that of the environment, taking the necessary precautions against suicide, erratic behavior, such as jumping out the window, or injuring himself or others. Third, the acute delirious patient needs continuous surveillance and too much stress cannot be placed on the desirability of having some alert nurse in constant attendance every minute.

Drugs for Sedation: Sedation is almost always necessary and individuals vary widely in their response to different drugs. For short periods we have found intravenous and intramuscular administration of luminal, sodium amytal, paraldehyde, or morphine most satisfactory. For longer periods of sedation (and sometimes it is desirable to keep an individual asleep for several days) we prefer the oral administration of a luminal-barbital mixture made up of one and one half grains luminal and five grains barbital per dram in a vehicle of lactated pepsin. This can be given safely over a period of several days, care being taken to watch the intake and output of fluids and elimination.

Mechanical Restraint: In the afebrile patient the ideal situation is to permit the individual freedom in an empty locked room in which the window is protected by a screen. Sheet restraints are easily applied and often suffice for the mildly delirious patient. Wet or dry sheet packs are effective for the more severely excited individuals and perhaps the best sedative effect from any physiotherapeutic procedure is obtained from continuous immersion in warm water in the bathtub. Ideally one needs the specially constructed seven foot tub in which the patient lies suspended in a hammock. He may be kept there for as long as eight or ten hours if the pulse, temperature, and respiration are carefully observed and remain within normal limits.

Supportive Measures: In every delirium one must automatically assume responsibility for the nourishment, the elimination, and particularly for the necessity of increasing the fluid intake. The latter may be accomplished orally or by tube but when this is impossible because of emesis the individual should receive the fluid hypodermically, either intramuscularly or intravenously, with not less than 3,000 cc. daily. Elimination can be obtained by either colonic irrigations or enemas.

Specific Measures to Meet the Disease: In every instance the methods suggested above to manage the delirium should be supplemented by treatment for the specific organic disease, i. e., the counteraction of the toxin, the administration of saline in bromide intoxication, the high caloric diet in pellagra, or the lumbar puncture in delirium tremens.

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The main hope of organized medicine lies in the integrity of the basic unit—the county medical society. One's medical allegiance is to the county society first; the hospital staff meeting, the informed cloak room conference, the specialist group meeting, the section or branch societies, where they exist should not be permitted to usurp loyalty to the county medical society. They are primarily for the advancement of scientific medicine. By and through the county medical society, the general interests of the profession must stand or fall. Without strong cooperative county societies, neither the state nor national medical associations can render their most effective service. In the common interests of all, never were the active support of and loyalty to the county medical society of greater moment.—The Journal of the Michigan State Medical Society.

MODERN TRENDS IN DEEP X-RAY THERAPY WITH PARTICULAR REFERENCE TO HIGHER VOLTAGES*

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During the past five years a number of observations have been made as to the relative effectiveness of very high voltages in deep roentgen therapy. While a few installations have been widely heralded as million volt x-ray machines, the actual voltages employed have usually varied from 500,000 to 800,000 volts, although in one instance 900,000 volts has been employed over a rather long period of time. After visiting several of the institutions that have been working with "supra-voltages" in this country, one can appreciate the difficulties that have been encountered in the development of this type of irradiation. In the first place, the original cost of the equipment is almost prohibitive and its operation often requires the combined efforts of a small corps of experienced workers. Moreover, there is considerable question at the present time as to how high the voltage must be in order to realize the advantages of "supra-voltage" x-rays.

Recent improvements in tube design have made equipment of 300,000 and 400,000 volts capacity as mechanically and electrically trustworthy as the most modern types of 200 KV apparatus. Since December 1934 we have been operating a Villard circuit type of therapy equipment at 300,000 volts, using a filter of two to five mm of copper, (i.e. an effective wave length of .10A to .07A) and a skin target distance of eighty to one hundred cm. Detailed reports of the output of this machine, the physical characteristics of the irradiation and data regarding the erythema values and depth dosage are being published elsewhere. Clinically we had been impressed by the fact that the tissues tolerate very much larger doses of the higher voltage irradiation and that the immediate tumor regression is better than can be attained by the smaller dosages employed at lower voltages. On the other hand, we know that few phases of medicine have developed more rapidly than radiology, and this rapid growth makes it difficult to evaluate

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recent trends in irradiation therapy. In most instances there has been little opportunity for individuals to employ more than a few of the many possible combinations of equipment and technique, and a great deal of discussion has arisen as to the relative merits of different voltages, different filters and different methods of applying the roentgen rays. Yet at the present time there is little reason to believe that a single quality of irradiation will ever be designated as the most desirable and effective for all types of x-ray therapy. Our technique must be suited to conditions as they are encountered in the individual case. Early in the course of their development it became evident that very high voltages have a somewhat limited usefulness and should not be employed for the treatment of all types of malignancy. In the following discussion the factors determining the effectiveness of x-rays at a depth are considered in relation to the indications for the use of higher voltages in deep roentgen therapy.

FACTOR DETERMINING THE PERCENTAGE DEPTH DOSE

In any consideration of x-ray treatment one must clearly distinguish between superficial and deep therapy. The use of the former term implies a condition wherein the lesion is on the surface of the body and only skin deep in its attachment to underlying structures. Whenever a tumor is situated beneath an intact skin and other normal tissue, the problems underlying so-called "deep therapy" must be taken into account. In all cases the results would be most ideal if the destructive effects of irradiation could be confined within the tumor itself, with little or no ill effect in adjacent normal tissues. In superficial therapy such conditions can be attained by the employment of a quality of radiation so "soft" and non-penetrating that its energy is entirely spent within the thickness of the tumor tissue. Underlying structures are not appreciably altered by the absorption of such soft low voltage x-rays in the surface layers. However, it is obviously impossible to deliver x-ray energy to lesions in the interior of the body without a considerable proportion of the irradiation being absorbed in the overlying superficial tissues. As far as the purposes of deep therapy are concerned, the effectiveness of any beam of irradiation depends upon the proportion of its energy that can be delivered into and absorbed within the depths of the lesion.

The percentage depth dose is an expression of the intensity of a beam of x-ray when measured at a depth of ten cm compared to the intensity of the same irradiation as it strikes the surface of the overlying skin. In order to reconcile many apparently conflicting statements in regard to the "depth dose" it is necessary to keep in mind the factors which determine that figure.

Figure 1 illustrates the manner in which a longer skintarget-distance may be employed to increase the percentage depth dose. We consider the resistance that a ten cm thickness of tissue offers to the passage of x-rays as only partially responsible for the decrease in the intensity of the irradiation at that depth, a sizeable proportion of this loss is simply due to the fact that the lesion is ten cm further away from the target than is the intervening skin. That proportion of the loss of intensity which is due to this factor (increasing distance) can be made relatively small by employing a tube-to-skin distance that is long in comparison to the skin-to-tumor distance. In other words, by taking advantage of the law of inverse squares and employing a longer skin-target-distance, the percentage depth dose can be considerably increased.

Figure 2 illustrates the manner in which an increase in the size of the portal may also increase the percentage depth dose. The size of the portal used determines the volume of the tissue irradiated. The quantity of energy being absorbed in any one unit of that volume depends not only upon the rays that primarily penetrate to that particular area but also upon the rays scattered into that region from surrounding volumes of irradiated tissue. There is every reason to believe that within certain limits, the larger the portal the higher the percentage depth dose. Applied to deep therapy, this would suggest that the use of a few large portals produces more effective irradiation at a depth than when the same volume of tissue is irradiated by means of a greater number of smaller fields.

While the percentage depth dose can thus be improved by the use of larger portals and a longer skin-target-distance, it is evident that such methods do not affect the one factor which primarily determines the effectiveness of irradiation at a depth. The "hardness" or the penetrating power of roentgen rays is fundamentally determined by their wave lengths, which, in turn, is primarily determined by the voltage that is applied to the x-ray tube. Figure

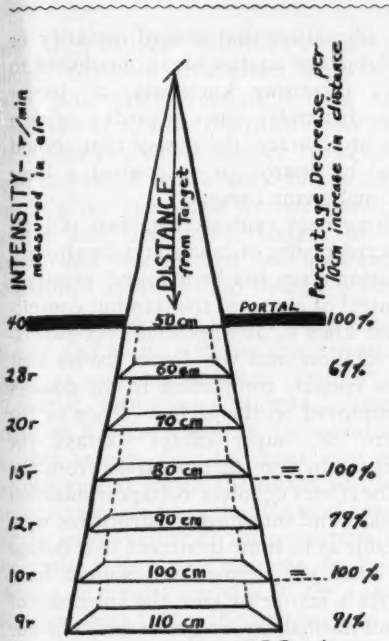

FIG. 1

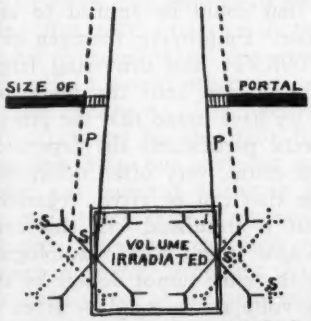

FIG. 2

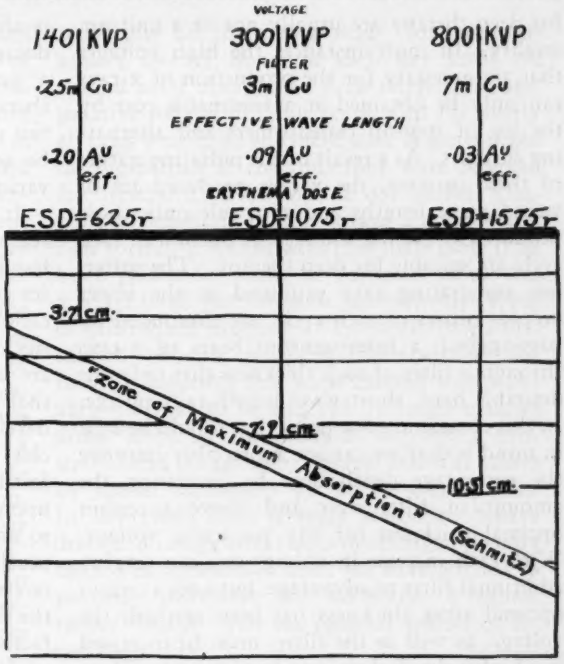

FIG. 3

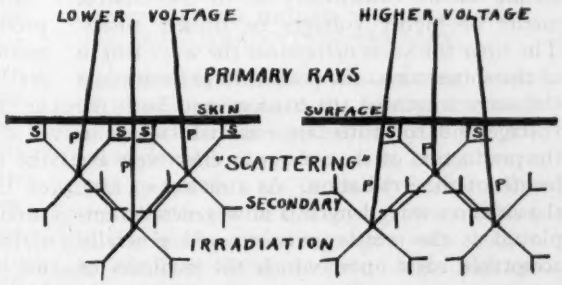

FIG. 4

Figure 1 illustrates the manner in which a longer skin target distance increases the percentage depth dose. These values (measured in air) indicate a considerably higher depth dosage than can actually be obtained in the tissues.

Figure 2 illustrates the importance of employing portals large enough to include some of the tissues surrounding the lesi n. The solid lines show how a proportion of the secondary or scattered irradiation (S) is lost along the margins of a lesion while the dotted lines indicate the way in which primary rays (P) striking aroung the lesion compensate for this loss by scattering a portion of their energy into the tumor area.

Figure 3 shows how the erythema dose and the depth to which a majority of the rays penetrate increases as the hardness of the irradiation is increased.

Figure 4 illustrates our present conception of the variations in the scattering process at different voltages. The erythema dose is evidently due to the amount of scattered irradiation (s) which is absorbed in the skin and is relatively independent of the quantity of primary irradiation (p) which passes through the superficial layers.

3 illustrates the fact that when shorter wave length x-rays are produced at higher voltages, these "harder" rays penetrate to greater depths before they are rapidly scattered in a so called "zone of maximum absorption." The fact that x-rays become more penetrating as their wave length is decreased is a fundamental principal of irradiation physics. Theoretically, it should follow that there must be some one particular voltage that is best suited to treatment of lesions at different depths within the body. As a matter of fact, good authority has suggested that eventually we will recognize an optimal wave length of x-rays, and hence an optimal voltage, to employ for treatment at any particular depth. However, in actual practice the filter, as well as the voltage, must be taken into consideration because the x-rays available

for deep therapy are usually not of a uniform quality. In most instances the high voltages that are necessary for the production of x-rays can only be obtained at a reasonable cost by the use of step-up transformers and alternating currents. As a result of the pulsating nature of these currents, the x-rays produced are of varied wave lengths and as a rule only those produced at the highest voltage portion of each cycle are suitable for deep therapy. The softer, less penetrating rays produced at the lower voltage phases of each cycle, are eliminated by passing such a heterogeneous beam of x-rays through a filter of such thickness that only the desirable hard, short wave length rays emerge. In this connection one point that should be kept in mind is that we cannot appreciably improve the percentage depth dose by increasing the amount of filter over and above a certain optimal thickness for any particular voltage. With each increase in voltage one can employ additional filter to advantage, but once a certain optimal filter thickness has been reached, the voltage, as well as the filter, must be increased if a higher depth dose is to be obtained. There should be no controversy as to the relative merits of higher voltages or thicker filters. The filter thickness determines the wave length of the softest rays, the peak voltage determines the wave length of the hardest, and both the voltage and the filter are essential factors in the production of the average or effective wave length of the irradiation. As a matter of fact, the effective wave length is now generally employed as the most convenient and generally acceptable basis upon which the qualities of roentgen rays may be compared.

THE IMPORTANCE OF QUANTITY: THE CONCEPTS OF ADEQUATE DOSAGE AND OPTIMAL TIME IN IRRADIATION THERAPY

There is little evidence to suggest that irradiation acts by primarily stimulating a resistance-to-tumor-growth. At the present time most authorities seem to be of the opinion that both x-rays and radium primarily act by a directly destructive action upon the tumor cells. This conception is one of fundamental importance because it has radically changed our ideas as to the quantities of irradiation that must be employed in tumor therapy. When prescribing roentgen treatments at the present time, the radiologist has in mind the effects of a certain quantity of irradiation and he expects his results to roughly parallel the extent to which he is able to administer that desired quantity or dosage. Numerous studies have contributed to a generally increasing knowledge of tumor therapy, so that today one can predict, with a fair degree of accuracy, the dosage that should be required to destroy or to control a large variety of malignant tumors.

It has long been evident that there is little reason to expect cures of cancer at a depth with less irradiation than has been found necessary for the control of cancer of the skin but complications arise when we attempt to deliver quantities of irradiation into the deeper tissues that are in some measure comparable to the dosages that are employed on the surface. Prior to the development of "super-voltage" x-rays the chief problems in deep therapy arose from the fact that the effects of lower voltage irradiation upon the skin and intermediate structures were so undesirable as to limit treatment to a dosage much less than the tumor itself should have received. As a matter of fact, the tolerance of the skin and normal tissues was usually the one factor which primarily determined the amount of irradiation that could be applied to any "internal" tumor. Employing roentgen rays produced at 300KVP, and delivering larger quantities of irradiation into the body per erythema dose, we have found that the general or systemic effects, particularly the depression of the leukocyte count, very often determines the total dosage that can be given, regardless of the area that is irradiated. In this connection, we know that many radiologists claim they give the same tumor dosage by the use of ordinary voltages, as could be given at higher voltages, except that treatment at the lower voltages requires a little longer time. We have been unable to reconcile this statement with the fact that repeated studies have definitely shown that irradiation dosage cannot be calculated independently of the time factor.

Various techniques of irradiation have been devised in an effort to find means of increasing the amount of x-ray that can be given through the skin and numerous systems of treatment have been reported, all of which can probably be considered as modifications of some one of four techniques that have been more or less original at their onset. It is generally agreed that the so-called "massive dose" was the starting point of measured x-ray dosage. First employed in Germany and coming to general attention soon after the close of the war, this method was the first to be used with the then

new "high voltage" (200KVP) equipment and simply consisted of a much larger dosage of more penetrating irradiation than had been employed up to that time in an effort to destroy the tumor at a single sitting. However, it was soon discovered that a lethal tumor dose could not be given in a single treatment without extensive and irreparable damage to adjacent tissues and this method has been practically abandoned as far as deep therapy is concerned.

Coincident with a general recognition of the danger and futility of the single massive dose came a more widespread employment of Pfahler's[1] "saturation technique." Based somewhat on Kingery's studies, the essential factor in this system was the establishment of a definite rate at which the tissues had been observed to recover from the effects of irradiation. By the employment of this predetermined rate one could at any time estimate the "effective" amount of irradiation still in the tissues. In actual practice the method consists of delivering through each portal one full erythema dose within two or three treatments and then maintaining that total quantity in the tissues by periodic replacement of that portion of the dosage which would otherwise have been lost by tissue recovery. This method has been chiefly criticized on the basis that the total dosage has been too low but more recently Pfahler[2] has reported definitely better results when very much larger "erythema doses" are employed. However, the most revolutionary changes in x-ray treatment have followed general acceptance of the principles credited to Coutard[3] who has shown that an amazingly high total dosage will be tolerated by normal tissues if a number of relatively small daily treatments are given at a low rate of intensity. While there is some question as to the relative importance of the original intensity, filtration and voltage used by Coutard, there is universal acceptance of the fact that the tissues will withstand a much higher total quantity of irradiation if it be given in divided doses by a technique similar to his plan of "protracted" therapy.

As an exact opposite to the old massive dose technique, Houbelein[4] has developed a method of continuous irradiation. Several years ago at the Memorial Hospital, a special room was equipped for the purpose of giving this form of therapy a trial. Arrangements were made whereby four patients could be subjected to irridation of the entire body for approximately twenty hours of each day until the desired total dosage had been received. Comparative data is difficult to obtain, for nearly all cases were in an advanced state of generalized carcinomatosis at the time they were accepted for treatment. However, if our present concepts of adequate tumor dosage are anywhere near correct, it would seem that little more than brief palliation could be expected from this method in all but the most radiosensitive types of generalized neoplasms. In concluding a discussion of this problem Chamberlain[5] has recently suggested that some tumors will probably continue to be attacked by single massive doses, some by the methods employing protracted and fractionated dosage, and still others by special techniques yet to be worked out. In any event there is every reason to believe that the ultimate advantages or roentgen therapy cannot be appreciated until we have learned to properly distribute the necessary "adequate tumor dosage" over an optimal period of irradiation time.

THE IMPORTANCE OF QUALITY: THE ADVANTAGES OF HIGHER VOLTAGES IN DEEP IRRADIATION THERAPY

Considerable variation in opinion exists among radiologists as to the relative merits of varying qualities of irradiation. Are the so-called soft and non-penetrating, long wave length x-rays that are produced at low voltages more effective in destroying tumor tissues than the hard penetrating short wave length rays obtained from modern high voltage machines? The answer to this question probably depends upon the location of the lesion. There is little reason to believe that some one particular wave length will eventually be found to be the most effective for all types of tumor therapy. Webster[6] has emphasized the theory that the effects of any irradiation upon tissues must fundamentally depend upon a process of ionization within the molecules of the individual cell. The effectiveness of the soft irradiation of unfiltered low voltage roentgen rays in the treatment of skin cancer is evidently due to the fact that the energy is absorbed where it is needed, i.e., throughout the superficial layers of tissue. Obviously there is no need for more penetrating qualities of irradiation as far as the skin is concerned. The treatment of deeper lesions undoubtedly requires harder, more penetrating rays, that will

scatter less rapidly and deliver a greater proportion of their original energy within the volume of deeper lying tissues.

There is abundant evidence of the fact that as the voltage applied to an x-ray tube is increased the resulting x-rays become harder and more penetrating. For example, whereas the rays ordinarily used for medical or dental diagnostic plates will not pass through an eighth of an inch of lead, it requires approximately two inches of lead, or two feet of concrete, to stop the irradiation from modern "supervoltage" apparatus. In considering deep therapy we are most interested in the fact that such exceedingly hard and penetrating irradiation passes through the skin and superficial tissues with only a relatively small proportion of its energy being absorbed until the deeper lying tumor bearing areas have been reached. There is no question but that such irradiation is also more penetrating throughout the deeper areas and to some extent "shoots through" the tumor tissues as well. As our experience with harder irradiation increases, it becomes evident that at higher voltages a larger quantity of the total energy is actually passing through the tumor and is being absorbed in the skin on the opposite side of the body. Landauer[7] and Compton[8] have stressed the importance of avoiding a misconception of this process of "shooting through with roentgen rays." They point out that even the hardest rays do not pass through the tissues without exerting an effect proportional to the amount of irradiation absorbed within each volume of tissue. The existence of a "zone of maximum absorption" has not been generally accepted and it is somewhat difficult to conceive of a quality of irradiation that would be highly penetrating to the skin but rapidly attenuated and absorbed in the underlying tumor bearing areas. On the other hand, the fact that very high voltage x-rays may prove inefficient to the extent that they "shoot through" the tumor will probably come to be regarded as a matter of relatively little importance as far as the purposes of deep therapy are concerned.

We have seen that the first advantage in the use of harder irradiation is a definite but small increase in the percentage depth dose. This gain is too small in itself to justify the expenditure involved in obtaining very high voltage x-rays. Far more significant than figures comparing the percentage depth dose at various voltages is a comparison of the number of "r" units of irradiation that can be applied to the skin before an erythema is produced by the harder, more penetrating x-rays. However, this is a matter which has also been subject to a great deal of controversy. Several reports have been offered as evidence that under the same conditions, an equal number of "r" units will produce the same degree of erythema, regardless of the wave length of the irratidation employed. Such figures have been obtained in experimental studies where small fields have been irradiated, but when large portals are employed and therapeutic dosages are given, the skin is found to tolerate much larger quantities of the harder irradiation before an erythema is produced. There is nothing mysterious or confusing in this phenomenon. Figure 4 illustrates the probable mechanism by which roentgen rays are scattered and absorbed in the tissues. Most authorities agree that an erythema is produced, not by the quantity of irradiation passing through the superficial tissues but only by the quantity that is actually absorbed within those layers. At higher voltages, as the x-rays become harder, larger quantities of the total energy of the beam penetrate to a greater depth before scattering and final absorption takes place. From the standpoint of deep therapy this means that at higher voltages a greater amount of irradiation energy can be applied to each portal before an erythema is produced.

Many physicists have been hesitant to approve of measuring widely differing qualities of irradiation with the same inonization chambers. However, the recent papers, of Glasser[9], Patterson and Parker[10], and Mayneord and Roberts [11] indicate that the international "r" unit can be employed with a reasonable degree of accuracy to compare the intensity of various qualities of x-rays as well as the gamma rays of radium. This conclusion increases the significance of many previously reported studies of the effects of varying qualities of irradiation. Failla[12], Quimby and their co-workers[13], Mudd, et al[14], Lauritsen[15], Leucutia and Corrigan[16], Mattick[17], Rhinehard[18], Schmitz[19], Smith[20], Murphy [21], Merritt[22], and others have pointed out as the wave length shortens, more and more "r" units must be applied to the skin to produce the same degree of erythema. Lauritsen[15], in particular, has calculated the amount of irradiant energy that is absorbed per cubic cm of body tissue when x-rays produced at different voltages are applied to the skin. In conclusion he has pointed out that by the

time an erythema has been produced by 800KV x-rays the body as a whole has been irradiated by sixty per cent more energy than when an equal degree of erythema is produced by 200KV x-rays. On the surface we know that the intensity of biological effects are influenced by the wave length of the irradiation and it seems reasonable to assume that a like relationship would exist within the deeper volumes of tissue. However, at the present time it is impossible to predict with any degree of accuracy the relative effects of high and low voltage x-rays at a depth, for we have little idea as to the variations in wave lengths that we may be dealing with.

Another aspect of the problem that must be taken into consideration is the possibility that harder irradiation shows a greater selective action in its effect upon tumor cells. It is generally agreed that the most desirable degree of tissue reaction is one producing the greatest degree of tumor destruction compatible with the continued life and function of adjacent normal structures. In the case of low voltage x-rays, we know that the biological effects are intensive and that more ionization is taking place per cubic cm than when the same volume of tissue is being irradiated by higher voltage, more penetrating x-rays. In both instances the more radio-sensitive tumor cells are the most severely damaged, but it seems reasonable to assume that the greater sensitivity of the tumor cells becomes all the more evident when harder irradiation is employed and the ionization process is not so intense within each unit volume of the tissue.

COMMENT

While there continues to be a great deal of discussion as to the relative merits of different voltages, different filters and different methods of applying roentgen rays, there is no question as to the practical value of irradiation therapy. Thousands of cases have been cured and innumerable instances of valuable palliation have been achieved in otherwise hopeless malignancy. The fact that an era of frank experimentation and empiricism has produced encouraging results probably largely accounts for the confidence in radiotherapy that has been displayed by the profession as a whole.

In this country the sum total of our experience with very high voltage x-rays is now large enough that questions concerning the effectiveness of this type of treatment may soon be settled upon a purely clinical basis. At the present time with respect to primary tumor regression, and particularly in respect to the preservation of normal tissues, the end results of higher voltage deep x-ray therapy show very definite improvements over the results of lower voltage techniques. We would particularly like to call attention to the fact that we do not advocate the use of higher voltage x-rays as an improvement to replace all other types of roentgen therapy. Deeply penetrating x-rays are obviously contraindicated when it is unnecessary to irradiate the deeper structures. It is recognized that the practical limitations of such increases have not been established, but we are convinced that if the results of deep x-ray therapy are to be materially improved we must use the longest skin target distance, the heaviest filteration and the highest voltage that it is economically feasible to employ.

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PRESIDENT'S PAGE

Members of The Kansas Medical Society:

The September meeting in each county society in the state is of unusual importance. This meeting, following the vacation of July and August, starts the active work of the year. We wish to draw your attention to a number of the activities of the State Society for your consideration, which we request you take up with your society in formulating plans for the year:

First, the legislative program.

Second, the appointment of a liaison committee to work with the Kansas State Board of Health. The duty of this committee is gradually being increased as it dove-tails with all of the activities of the Kansas State Board of Health in maternal and child welfare, tuberculosis work, the work in venereal disease and various public health activities including immunization, high school athletic assistance, ordinances relative to the handling of food, etc.

Third, the problem of the medical care of the indigent is still with us and no doubt will be a serious one this winter. We request that this be studied by a local medical economics committee that will be able to advise with the State Medical Economics Committe in this connection.

Fourth, it is our recommendation that a definite program be outlined for each society for each meeting of the year for real scientific work. Dr. H. L. Chambers, Chairman of the Scientific Work Committee of the State Society, will be glad to offer any suggestions or assistance in this connection if desired. It should not be forgotten that these organizations are primarily for scientific study and other activities are incidental thereto.

Fifth, an organized effort should be made to secure the membership of every eligible physician in each county. The Kansas Medical Society is growing and through the activity of each local organization it can continue.

H. L. Snyder, President.

EDITORIAL

KANSAS DOCTORS AND KANSAS ATHLETES

Within the next few days, thousands of young Kansas boys and girls will again be enrolled in school and will be starting courses in physical training, engaging in intra-mural sports, or competing for places upon the schools athletic teams. With an appraising glance, one is apt to survey this situation and cast a remark to the effect that it is a fine thing that students now have the privilege of fine gymnasiums, showers, good equipment, prepared teachers, faculty supervision and athletic board control. In retrospect one is prone to be just a little jealous of the present generation and its fine setup as compared to the poor equipment of previous days.

However, if the situation be analyzed just a little more closely, one cannot fail to realize that there is more to the physical education of these students than the physical equipment, which may be purchased by the boards of education, and the physical directors. One must consider the physical development of the individual student, with regard to skeletal and muscular growth, adolescent development and nervous and physical reserve. This analysis can only be made by someone trained in the fields of human physiology and pathology. In some of the larger institutions and school systems, this has been accomplished through the employment of part or full time school physicians. In the smaller systems, the budget will not permit such an expenditure; therefore, the coach or physical director must rely upon that service which he is able to obtain "free gratis". Too frequently this service has been procured from individuals or cultists, desirous of making public contacts, but not capable of rendering the service required.

A few years ago, the physical director of one of the larger state schools instituted routine physical examinations for all men coming under his supervision. He procured the services of two of the younger practitioners of his community to conduct the examinations. In the course of these examinations much interesting information was obtained. There was one instance of amoebic dysentary, several hernias, occasional tachycardias or arrhythmias, etc. These students were not permitted to enter active physical training until these defects were corrected. That physical director has given his charges an immeasurable service, but that service could never have been rendered had it not been for two interested and willing M.D.'s, giving their time and service for no other remuneration than the personal and public contacts that they were able to make.

Medical men over the state should take into consideration the athletes of the forthcoming year. If possible, coaches and physical directors should be contacted, and the services of physicians should be offered to conduct physical examinations, particularly upon students entering athletic competition. Coaches should be advised that all injuries, intervening infections and ailments should be checked to a physician, family or otherwise before active competition or further practice is permitted. Kansas physicians should take it upon themselves to see that no Kansas athlete enters active competition, suffering from an ailment, either chronic or acute, which might impair that individual's chances to carry on after school days are over.

THE COUNTY MEDICAL SOCIETIES

After a period of three months of inactivity for most of the county medical societies, it is again time to resume the duties which binds the members of the medical profession more closely together. The county medical society is the important unit of the state and national medical association. It is the unit that holds the whip, and which will have the predomi-

nating influence upon the policies and future welfare of medical practice.

The membership of a county medical society should include every physician residing and practicing in that county, who by his earnestness and fairness in the practice of medicine, has earned the right to be elected to membership by that society. It is the role of present members to cast aside petty and professional jealousies, and encourage eligible non-members to affiliate with their county society. It is the duty of the non-member, so approached, to make every possible effort to become a member of his local county society.

Never in the history of American medicine, individualistic as it has been in the past, and as it must remain in the future, has it been so important for detailed organization. Medicine is meeting face to face, the possibilities of regimentation, lay domination, and cultist invasion. And, at the present time, organized medicine, and particularly the county societies and individual members, is poorly equipped to meet this situation. The Kansas Medical Society needs one hundred and five county medical societies, one hundred per cent eligible membership, and one hundred per cent individual cooperation.

BECOME ACQUAINTED WITH YOUR LEGISLATOR

The medical profession is the guardian of public as well as personal health within the state. Holding, as we do, our licenses to practice from the state, it is our duty to use our professional knowledge and experience in its interests. How can this be done?

Every year the legislature is in session, numerous bills come up for consideration, which have to do directly or indirectly with the health of the people. In the past much legislation has resulted in that which is not in the best interests of the inhabitants owing to the fact that those intrusted with making the laws were not fully informed on the subject. This has been perhaps more the fault of a reticent medical profession than of the lawmakers themselves.

To accomplish the best result, the doctor must exercise his prerogative as a citizen and offer freely his specialized knowledge. We have nothing to ask that affects ourselves personally more than it does any other section of the population. A basic science law, for instance, cannot affect the status of the medical or dental professions. They all meet the requirements of any basic science law standard as it obtains in other states. So for them its enactment is immaterial. Its passing, however, would raise the standard of all the various cults who may be consulted by sick persons.

Know your candidates for public office. Meet them personally and keep in constant touch with them. See that they are fully informed regarding the merits or faults of any proposed legislation. All this in the interests of public health and a higher standard of medical care.—Journal of the Michigan State Medical Society, July, 1936.

LABORATORY

Edited by J. L. Lattimore, M.D.

THE ADRENALIN TEST IN HEMATOLOGY

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The routine blood counts and the examination of smears taken from the finger tip are not sufficient in many instances to diagnose an hemopathy. In many cases we must resort to some supplementary tests, which can throw some new light on the already difficult diagnosis of the different blood diseases. The three methods most frequently used for their diagnostic value are: The sternal puncture, the concentration of the blood, and the adrenalin test.

In this paper we shall discuss this last test, which is very useful in many hemopathies, but principally in the differential diagnoses of splenomegalies. The test of Benhamou takes advantage of the vasoconstrictor properties of adrenalin, which provokes the issue of cellular elements from the internal organs and chiefly from the spleen, where the cellular elements may be stationed for long periods of time. The adrenalin is injected subcutaneously, in doses of one milligram (1 cc. of a 1:1000 solution) for adults or one-half milligram for children, after being sure that all the contraindications to the use of adrenalin have been eliminated (cardiopathies, etc.)

The original technique of Ed Benhamou, modified by Sabrazes, is as follows:

1. Make a complete blood count and inject the adrenalin subcutaneously.
2. Five minutes after, a white blood count is made.
3. Make complete blood counts twenty, forty, and sixty minutes after the injection of adrenalin.
4. Three or four hours later, another complete count is made.

It is well known that the many leukopenic forms of leukemia make differential diagnosis of hemopathies difficult, as the confusion with an agranulocytosis is probable. In such cases the number of granulocytes is very low and confusion of diagnosis is easy, particularly if necrotic lesions of the pharynx are present. It is highly probable that many of the so-called agranulocytoses are in reality leukopenic leukemias, which have not been thoroughly investigated.

In the leukemias, the adrenalin produces an outpouring of numerous white cells, which many times may even double the previous count. The leukocytosis, in contradistinction to what happens in the normal individual, lasts longer, so that even four hours later the white count is higher. In leukemias the increase in red cells is rather insignificant or absent, which forces one to admit that the splenocontraction is not very pronounced in leukemias, agreeing with the fact that the leukemic spleen is not a reservoir of cells, but is actively proliferating and compact, so that the contraction of the smooth muscles will squeeze out of the splenic parenchyma only a moderate number of elements belonging to the white series. Of course, it must be considered that the action of the adrenalin influences also the small vessels of the bone marrow and liver.

In cases of true agranulocytosis, there will be a response to the adrenalin, with an increase of the hematic elements, but with a complete absence or small number of granulocytes.

I have many times found the combination of the adrenalin tests with the concentration method useful in the examination of blood. The results of such a combined method are very brilliant, because, in my own experience, all the pathological elements are examined very easily in a single slide.

Where the adrenalin test may certainly render very important service, is in the splenomegalies. The spleno-hematic reaction to the adrenalin is manifested by a triple complex, the reduction of volume of the organ, the hyperglobuly, and the increase in the white cells. In case of infectious or parasitic diseases, with the hyperglobuly, numerous parasites (malaria) or bacteria, which may be cultured (typhoid, streptococcus), are thrown into the peripheral circulation.

According to the adrenalin test, we are able to note three types of splenomegalies:

1. Chronic Splenic Tumors, without or with slight contractility, leukemias, granulomatosis, or sclerosis. In such cases the spleen is formed by a dense cellular or connective tissue and does not contain any demonstrable amount of blood. In such cases the findings in the peripheral blood are scarce or nil, and only occasionally, in cases of leukemias, for example, will there be a number of white cells or immature elements, but the number of red cells will be stationary.

2. Hemolytic Splenomegalies are characterized by a moderate increase in red cells. In such cases the spleen shows a marked congestion, but the cordons are very cellular and in active proliferation and there is insufficiency of the original venous rami, so that the blood progresses with difficulty toward the venous sinuses. To this same group, in which the adrenalin contraction of the spleen is very moderate, may be added the splenomegalies of the chronic infections or the hepatosplenomegalies (secondary or symptomatic splenomegalies).

3. Pylephlebitis or Congestive Spleno-

megalies, with marked contractility. In these forms, the reduction of volume may even reach four or more transverse fingers, due to the extreme squeezing of the pulp under the influx of adrenalin. In such cases, the abundant amount of blood stagnating in the meshes of the pulp is easily thrown into the venous sinuses and into the peripheral circulation. After adrenalin, the red cells may increase by one million or more, according to the degree of congestion of the splenic pulp.

The test is particularly useful in those difficult cases of Splenic Anemia, to differentiate between Banti's syndrome and a pylephlebitic syndrome. The Bantian splenomegalies are made up by a dense connective tissue and the meshes of the pulp contain a very small amount of blood so that the spleen will not contract under the stimulus of adrenalin. In the congestive type, instead, where there is little cellular proliferation and the spleen is more of a reservoir, the contraction will be marked with the results of a net increase in cells.

MEDICAL ECONOMICS

Edited by O. W. Davidson, M.D.
of the Medical Economics Committee

Editor's Note—Dr. W. E. Janes, Secretary of the physicians of Greenwood County has been kind enough to prepare at our request, the following description of an indigent medical care plan recently adopted in that county. Since the plan commenced on January 1, 1936, the tables A and B show comparative expense under the new method and under a former one. The redistribution and saving of expense is interesting and particularly from the standpoint that all persons concerned are said to be better satisfied. An explanation should possibly be made that the substantial saving in public health expense has been effected mainly by a distribution of this work among individual physicians and by the fact that a sizeable immunization program is included in the figures shown for the first half of 1935.

The Greenwood County Commissioners contracted for 1936 with the practicing physicians and surgeons of the county who wished to participate in caring for the indigent sick of the county. The commissioners were desirous of this contract because it guaranteed a twenty per cent reduction in expenditures for medical service, and as they had previously been unable to reduce hospital and drug expense. By comparison with neighboring counties, it was found that the rate of expense in Greenwood County was too high. This in part, was caused by the fact that Greenwood County is one of the largest in the state (1341 square miles) with a population in 1935 of 17,778 people. While the county is second in size in the state, it is thirty-second in population. This, of course, caused a wide distribution of indigent sick in a fairly sparsely settled county. The principal resources come from grazing lands and oil, both of which have been hard hit in the last few years; and consequently more people are compelled to ask county aid than would be experienced in counties with diversified industries and payrolls.

The county at the present time has thirteen practicing physicians and surgeons, seven of whom are located in Eureka, and six in other towns of the county. Of these, four do not belong to any county or state medical organization. All but two of the physicians and surgeons in the county are participating in the present contract.

This method of caring for the indigent sick allows almost a complete free choice of physician and a much speedier administration of service. It has been found impractical in a county of this size and population for one or two medical men to administer care to the indigent sick.

Under this contract, the participating physicians and surgeons provide and pay for the public health officer, sanitation inspector, emergency dental care, as well as all medical, surgical, hospital, and drug expense appertaining to the indigent sick.

Persons subject to this service include direct relief patients, PWA, WPA, rehabilitation and any others found to be destitute. Some cases are borderline, and it is understood in such instances that the medical men shall collect as they can for partial remuneration. Very little has been collected. The Poor Commissioner supplies each doctor monthly with a list of families eligible for medical care, which list classifies direct relief, WPA, PWA and rehabilitation families with comments in every case regarding the ability after investigation of each family to pay in part for services rendered. This is a suggestion only; as adequate care is given for all.

The county suffered a rather severe epidemic

TABLE A

Expenditures for first 6 months 1935.

	January	February	March	April	May	June	Totals
Hospitals	$705.65	$768.82	$817.61	$514.16	$528.52	$528.75	$3863.51
Doctors	59.95	130.10	202.90	139.30	142.75	158.40	833.40
Nursing of Indigent	87.75	98.00	100.25	35.00	116.25	67.00	504.25
Public Health	601.43	556.00	543.05	618.30	731.33	545.86	3595.97
Drug Stores	303.87	108.84	647.27	303.25	399.51	388.54	2151.28
Drug Companies	102.16	89.74	31.92	125.64	135.28	149.58	634.32
Ambulance	5.00	.....	24.85	.....	8.00	11.00	48.85
Dentists	73.00	37.50	32.00	26.50	32.00	25.50	226.50
	$1938.81	$1787.90	$2399.85	$1762.15	$2093.64	$1874.63	$11858.08

TABLE B

Expenditures for first 6 months 1936.

Hospitals	$328.80	$128.40	$109.35	$150.65	.....	$89.15	$806.35
Doctors	514.71	701.62	559.15	739.56	673.58	668.10	3856.72
Nursing of Indigent	81.00	100.65	76.50	44.50	70.60	74.00	447.25
Public Health	110.00	110.00	110.00	136.70	112.55	110.00	689.25
Drugs	246.25	158.20	191.26	145.35	144.53	135.93	1021.52
Ambulance	.....	8.00	.....	.....	3.00	.....	11.00
Dental	6.00	15.00	54.00	34.00	45.00	42.50	196.50
Laboratory	5.00	5.00	7.10	4.50	5.00	.....	26.60
Office Expense	32.54	32.75	19.10	21.05	19.70	23.10	148.24
Miscellaneous	.....	.....	.....	4.56	5.54	1.50	11.60
	$1324.30	$1259.62	$1126.46	$1280.87	$1079.50	$1144.28	$7215.03
Balance on hand	25.70	90.38	223.54	69.13	270.50	205.72	884.97
	$1350.00	$1350.00	$1350.00	$1350.00	$1350.00	$1350.00	$8100.00

TABLE C

Monthly Comparison

	January	February	March	April	May	June
Drug Stores	$246.75	$158.20	$191.26	$145.35	$126.48	$123.43
Drugs dispensed						
Eureka	75.75	70.14	72.50	88.51	95.63	97.10
Outside	32.13	19.30	20.25	28.85	14.65	15.80
	354.63	247.64	284.01	248.46	236.76	236.33
Mileage						
Eureka	12.90	23.30	23.90	42.00	38.75	34.55
Outside	15.50	13.95	11.50	50.90	12.40	29.55
	28.40	37.25	35.40	92.90	51.15	64.10
Hospitals	328.80	128.40	100.60	150.65	.....	89.15
Outside Nursing	81.00	100.65	76.50	44.50	70.60	74.00
Health Officer	110.00	110.00	110.00	110.00	110.00	110.00
Dental Bills	6.00	15.00	54.00	34.00	45.00	42.50
Ambulance	.....	8.00	.....	.....	3.00	.....
Laboratory	5.00	5.00	15.85	4.50	5.00	.....
Miscellaneous	.....	.....	.....	4.56	5.54	1.50
Office Expense	32.54	32.75	17.00	21.87	19.70	23.10
Health Office Expense	.....	.....	.....	26.70	2.55	.....
Paid to Doctors	514.71	701.62	538.15	739.56	673.58	668.10
Office Calls						
Eureka	224	320	415	417	343	438
Outside	60	44	50	137	76	77
	284	364	465	554	419	515
Residence Calls						
Eureka	215	223	188	79	202	171
Outside	74	69	59	223	40	47
	289	292	247	302	242	218
Value of Unit						
Eureka	.17	.40	.30	.30	.30	.30
Outside	.56	.80	.60	.60	.60	.60
Units	892	935	962	1160	871	945
Balance on hand	$25.70	$113.58	$223.54	$69.13	$270.50	$205.72

of influenza and scarlet fever during the early months of this year, but the death rate for the first half of the present year has been less than during the similar half of 1935.

HOW THE PLAN WORKS

Each participating physician renders a statement to the secretary of our organization which statement includes the details of services rendered. It specifies the name of the patient, date of service, diagnosis, prognosis, and treatment, and general remarks. These statements are summarized. A unit system is used altho some services have a constant fixed price. An office call is considered one unit; a residence call is considered two units, and there is a schedule of values for various services rendered. After payment of all bills such as public health officer, mileage, drug bills, hospital bills, dental bills, etc., the value of the unit is determined. This value varies with the number of units per month and the cash balance after payment of bills enumerated. During March, April, May and June the value of the unit was placed at thirty cents by which means all bills were paid, and a substantial reserve accummulated. The value of the unit could have been somewhat higher, but a reserve for emergencies would not have been provided. Therefore the contract affords a remuneration of about thirty per cent normal fees for care of direct relief, WPA, PWA, rehabilitation and such others not classified but needing emergency care. The drug expense has been cut about forty per cent. The plan is effective partly due to the hearty cooperation of our dentists and druggists.

ADVANTAGES OF THE PLAN

1. A free choice to indigent of participating physicians.

2. A speedier service to the indigent sick.

3. A distribution of the indigent sick among the participating physicians so that in epidemics or emergencies the combined use of the medical profession of the county is available.

4. Definite reports monthly to the Poor Commissioner and to the County Commissioners summarizing the medical service completed during the month with diagnosis and prognosis.

5. A definite reduction in routine work in the Poor Commissioners offices so that more emphasis may be placed upon ascertaining proper cases for indigent care or for release of cases from indigent roles.

6. The County Commissioners and the Poor Commissioner are relieved of the responsibility and detail of deciding what medical care or surgical procedure is advisable among the indigent, this responsibility being assumed by the participating physicians and surgeons.

7. A twenty per cent reduction in expenditures for indigent care in the county as compared with 1935, or thirty-three per cent reduction as compared with 1934. The taxpayers are better satisfied.

8. A uniformity of satisfaction among the indigent. They like to have their own doctor of choice.

9. A spread of small remuneration to physicians according to services rendered, which service too often has been with no remuneration whatsoever.

10. A definite elevation of morale or regard for the physician.

11. A better spirit of cooperation among physicians and with indigent.

All three County Commissioners and the Poor Commissioner have stated that the plan is working excellently and without complaint. It is to be observed that the indigent enjoy and appreciate the opportunity of calling the doctor of their choice, as other more fortunate neighbors may do.

For your information a summary of expenditures for the first half of this year is appended, and also comparison summary for the similar expenditures in 1935.

OFFICIAL PROCEEDINGS

78th Annual Meeting

(Concluded from the August issue)

The Committee on Maternal and Child Welfare desires to submit the following report:

To The House of Delegates:

Since this Committee was appointed only recently we have not as yet had time to engage in all of the projects and activities that we believe are possible in the fields of material and child welfare.

Our activities to date have concerned mostly maternal and child welfare portions of the Social Security Act as is indicated in the following minutes of our first meeting:

A meeting of the Maternal and Child Welfare

Committee was held at the Kansan Hotel in Topeka at 12 M. on May 29, 1936. Members present were: Dr. H. L. Snyder, Dr. John L. Grove, Dr. J. H. A. Peck, Dr. Harry Davis, Dr. Charles Jameson, Dr. Roy Russell, Dr. C. E. Coburn, Dr. E. G. Padfield, and Dr. W. F. Bowen. Clarence G. Munns was present as Executive Secretary.

Dr. H. L. Snyder stated that the purpose of this meeting was to introduce the Maternal and Child Welfare Committee into various activities of the Social Security Act. He described the work the Medical Economics Committee has accomplished to date on this subject, and complimented Dr. Earle G. Brown, Secretary of the Kansas State Board of Health for the splendid cooperation he has given in drafting the Kansas plans for this activity. He stressed the fact that Dr. Brown desires for the Society and the county medical societies to participate extensively in the program under the Act.

Dr. John L. Grove presented a written summary of the provisions of the Social Security Act. After extensive discussion, Dr. Roy Russell offered the following motion which was seconded and carried unanimously: That this Committee offer its services and cooperation in the Maternal and Child Welfare functions of the Social Security Act in any way desired by the Kansas State Board of Health, and that it express to the county medical societies its hope that they will likewise offer their fullest assistance and cooperation.

At 2:00 P. M. the meeting was adjourned to the Kansas State Board of Health office for the purpose of a joint conference with representatives of that organization. Additional members present at that meeting were Dr. Earle G. Brown, Dr. L. A. Calkins and Dr. John D. Clark.

Dr. Brown presented a further description of the Maternal and Child Welfare portions of the Social Security Act, and discussed in particular the post-graduate courses which are planned thereunder. He asked the Committee for its recommendations on possible districts in the state for the courses, on possible speakers, and on possible subjects. Dr. Brown's recommendation that the western one-third of the state be offered the first activity in this connection was approved. A motion offered by Dr. Jameson, seconded and carried approved all plans outlined by Dr. Brown for districts, speakers and subjects.

A motion by Dr. John D. Clark, seconded and carried, approved a recommendation to the Society Committee on Public Policy that a birth reporting law patterned after the New Jersey statute be sponsored by the Society in the next term of the legislature.

A motion by Dr. J. H. A. Peck, seconded and carried, approved the institution in Kansas of an official birth report to the State Board of Health. Discussion also followed concerning the advisability of requiring information about congenital deformities on birth certificates, and recommendation was made that procedure in this direction be studied by the Society Committee on Public Policy.

Adjournment followed.

Since that time we have attempted to assist Dr. Earle G. Brown, and the Kansas State Board of Health in all ways possible in this connection and particularly in the obstetric and pediatric postgraduate programs to be presented in various areas of the state.

It is our belief that most of our activities during the coming year will be closely allied with the Social Security Act and we have hopes that several interesting programs can be made available to the Kansas medical profession thereunder.

Dr. E. C. Duncan, Chairman of the Committee on Revision of Constitution and By-laws, presented the following report:

To the House of Delegates:

We herewith submit a revision of the Society Constitution and By-laws as directed.

This was truly a gigantic task. Our committee has had numerous meetings, and our Executive Secretary has given his whole-hearted support.

We do not claim to have a perfect document, but we do believe its adoption without material change will be to the interest of the Society.

There are controversial questions, like for instance, under what circumstances shall a doctor living in one county have his membership in another; when a physician moves from one county to another, and from one state to another, where shall he have his membership. Much discussion and advice has been secured on these and other points from many physicians throughout the state, and the final draft represents our best judgment.

I want to particularly thank Drs. A. W. Fegtly and O. P. Davis for their help. Without these two I am afraid there would have been no revision. I want to also thank Dr. H. L. Chambers, Dr. Earle G. Brown, Dr. G. R. Hastings, Dr. H. L. Snyder and Dr. J. F. Hassig for their splendid assistance.

Dr. W. P. Callahan stated that the delegates of the Sedgwick County Medical Society had carefully considered the proposed revision, and that although they believed it to be as a whole an excellent document, they desired to suggest the following minor changes:

That Section 1, Article VI, which provides that the Council shall consist of one Councilor from each Councilor district, the President, the President-elect, the first Vice-president, the Secretary, the Treasurer, the Chairman of the Defense Board and the Chairman of the Editorial Board, should be changed to read that the Council shall consist of one Councilor from each Councilor district, the President, the President-elect, the Secretary and the Treasurer.

That Section 1, Article XI, which provides for election of the Defense Board by the House of Delegates, should be changed to provide for election of the Defense Board by the Council.

That Section 2, Article XI, which provides that the Defense Board shall elect its own chairman, should be changed to provide for appointment of the Chairman of the Defense Board by the Council.

That Section 1, Article XII, which provides for election of an Editorial Board by the House of Delegates, should be changed to provide for election of the Editorial Board by the Council.

That Section 2, Article XII, which provides for the election of the editor of the Journal and Chairman of the Editorial Board by the House of Delegates, should

be changed to provide for appointment of this official by the Council.

That Section 5 of Chapter IV of the By-laws, which provides that each component society shall elect an alternate for each delegate it selects, should be changed to provide that each delegate shall be authorized to appoint his own alternate in the event he is unable to attend.

That Section 12 of Chapter IV of the By-laws, which provides that the House of Delegates shall fix the amount of the per capita assessment for the succeeding year at each annual session, should be changed to provide that the Council shall establish at each annual session the amount of the per capita assessment for the succeeding year, not to exceed $10.00 except by a two-thirds majority vote.

That Section 17 of Chapter IV of the By-laws, which provides for the election of delegates to the House of Delegates of the American Medical Association, should be changed to omit the provision wherein one member of the Society is re-elected annually as a delegate. Also, that a provision should be added wherein the incoming president will be elected each year as one of the delegates.

That Section 9 of Chapter X of the By-laws, which provides that the Executive Committee of the Council shall be composed of the President, the President-elect, the Secretary, the Treasurer and the Chairman of the Defense Board, should be changed to omit the Chairman of the Defense Board.

Dr. W. P. Callahan moved that the above recommendations be considered and approved individually by the House of Delegates. Seconded and carried. The recommendations were then voted upon separately, and all were approved.

Dr. O. P. Davis moved that an amendment be made providing that in the event regularly elected delegates or alternates are not present at meetings of the House of Delegates that body may proceed to elect a substitute. Seconded and carried.

Dr. Henry N. Tihen moved that an amendment be made in the By-laws affixing the annual dues of the Society permanently at $10.00 per year until such time as a change is desired by the House of Delegates. Seconded and carried.

Dr. A. W. Fegtly moved that the Executive Secretary be empowered to make any minor correction in wording and punctuation that are found necessary in the final drafting of the Constitution and By-laws. Seconded and carried.

Dr. E. C. Duncan moved that the proposed Constitution and By-laws be adopted as amended, and that the following resolution of adoption be incorporated in the official minutes:

Be it hereby resolved that this revised constitution and by-laws shall be in full force and effect at the close of the meeting of its adoption, and that it shall supersede all prior constitutions, by-laws, and amendments of this Society.

Likewise, that the officers, councilors, board members and committee members who are holding offices for definite terms under the Constitution and By-laws immediately preceding shall serve until the expiration of the term for which they were elected, and until their successors under this revised Constitution and By-laws have been duly elected, qualified and installed.

Adopted this 11th day of May, 1936, at a meeting of the House of Delegates of The Kansas Medical Society in Kansas City, Kansas.

Seconded and carried.

The next order of business was the annual election of officers. Thereupon Dr. J. F. Gsell was elected as President for a term of one year commencing at the close of the 1937 annual session; Dr. N. E. Melencamp was elected as first Vice-president and Dr. George W. Davis as second Vice-president for terms of one year each commencing at the close of the 1936 annual session; and Dr. George M. Gray was re-elected as Treasurer for a term of one year commencing at the close of the 1936 annual session. No election was necessary for the office of Secretary inasmuch as the present term of Dr. H. L. Chambers does not expire until the annual session of 1938.

The following councilors were elected by caucus of their individual districts for terms of three years each: Dr. F. R. Croson of Clay Center, Dr. L. S. Nelson of Salina, Dr. R. T. Nichols of Hiawatha and Dr. L. F. Barney of Kansas City.

The personnel of the Council for the year May, 1936 to May, 1937 was therefore reported as follows:

First District—R. T. Nichols, M.D., Hiawatha, term expires 1939.
Second District—L. F. Barney, M.D., Kansas City, term expires 1939.
Third District—E. C. Duncan, M.D., Fredonia, term expires 1937.
Fourth District—J. L. Lattimore, M.D., Topeka, term expires 1938.
Fifth District—Marion Trueheart, M.D., Sterling, term expires 1938.
Sixth District—Henry N. Tihen, M.D., Wichita, term expires 1937.
Seventh District—F. R. Croson, M.D., Clay Center, term expires 1939.
Eighth District—L. S. Nelson, M.D., Salina, term expires 1939.
Ninth District—Walter Stephenson, M.D., Norton, term expires 1938.
Tenth District—C. D. Blake, M.D., Hays, term expires 1937.
Eleventh District—A. C. Armitage, M.D., Kinsley, term expires 1938.
Twelfth District—N. E. Melencamp, M.D., Dodge City, term expires 1937.

Adjournment followed.

COUNCIL MEETING

A meeting of the Council was held at 5:00 p. m. on May 11, 1936, at the Chamber of Commerce Building, Kansas City, Kansas. Councilors and officers present were as follows: H. L. Snyder, M.D., Winfield; Geo. M. Gray, M.D., Kansas City; H. L. Chambers, M.D., Lawrence; F. R. Croson, M.D., Clay Center; L. S. Nelson, M.D., Salina; Marion Trueheart, M.D., Sterling; N. E. Melencamp, M.D., Dodge City; A. C. Armitage, M.D., Kinsley; Henry N. Tihen, M.D., Wichita; E. C. Duncan, M.D., Fredonia; C. D. Blake, M.D., Hays. Clarence G. Munns, Executive Secretary, was excused by reason of an illness in his family.

The first order of business was an election to fill two expired terms on the Defense Board. Dr. O. P. Davis was elected for a term of two years, and Dr. L. S. Nelson was elected for a term of three years, as provided in the new Constitution and By-Laws. The standing of the Defense Board for the year from May, 1936 to May, 1937 was then announced as follows:

O. P. Davis, M.D.—Term Expires 1938
L. S. Nelson, M.D.—Term Expires 1939
C. C. Stillman, M.D.—Term Expires 1937

Instruction was given that the Defense Board should elect its own chairman, as is also provided in the new Constitution and By-Laws.

The next order of business was the election of the Editorial Board, wherein Dr. W. M. Mills and Dr. L. R. Pyle were elected for terms of three years each, and Dr. R. B. Stewart and Dr. F. C. Taggart were elected for terms of two years each. Dr. Geo. M. Gray moved that Dr. H. L. Snyder consult with the Editorial Board for appointment of the other member of this Board, who shall serve for a term of one year. Seconded and carried. Dr. H. N. Tihen moved that Dr. W. M. Mills be elected as chairman of the Editorial Board and Editor of The Journal of The Kansas Medical Society. Seconded and carried.

Dr. N. E. Melencamp moved that a sug-invitation of the Shawnee County Medical Society to hold the 1937 annual session in Topeka be accepted. Seconded and carried.

Dr. H. N. Tihen, chairman of the Executive Secretary Committee, presented the following report:

> That although this Committee has been officially disbanded, it met recently for the purpose of preparing a recommendation of an increase in the salary for the Executive Secretary, and since it feels his work has been sufficiently commendable to occasion an expression of appreciation on the part of the Society, it therefore recommends his salary should be increased $50.00 per month.

Dr. E. C. Duncan moved that an increase in this amount be approved effective May 1, 1936. Seconded and carried. Dr. E. C. Duncan moved that the Executive Secretary also be authorized to include in his expense account any expenses for entertainment or other incidentals that are incurred in connection with his work. Seconded and carried.

Discussion followed concerning the salaries of assistants in the central office, and Dr. F. R. Croson moved that any increases of this kind should be discussed and approved by Dr. H. L. Snyder and Dr. Geo. M. Gray. Seconded and carried.

Dr. N. E. Melencamp moved that a suggestion should be made to the Leavenworth County Medical Society that it discuss the resolution presented by that group with the Kansas Board of Administration, and in the event it was unsuccessful in accomplishing the objectives sought, that it refer the matter to the Council. Seconded and carried.

Dr. Geo. M. Gray moved that the Committee on Public Policy be authorized to proceed with its contemplated plans for a Society legislative program in the 1937 session of the legislature, and that in the event a basic science law is to be introduced, the measure should be as complete and effective as possible. Seconded and carried.

Upon motion by Dr. L. S. Nelson, seconded and carried, official county medical society charters were approved for Wabaunsee and Pottawatomie Counties.

Dr. Croson moved that the amount of bonds for employees in the central office should be left to the discretion of Dr. Geo. M. Gray. Seconded and carried.

Instructions were given that unpaid members should be dropped from the official Society mailing list effective June 1, 1936.

Dr. Marion Trueheart presented information

concerning difficulties being experienced by one of the component societies in his district. Dr. H. N. Tihen moved that Dr. Trueheart be requested to hold a special meeting with this group in an effort to secure an amicable agreement and understanding. Seconded and carried.

Dr. H. N. Tihen moved that the dates of the 1937 annual session be established as May 3, 4, 5 and 6, and that the program and general arrangements be left to the discretion of Shawnee County Medical Society. Seconded and carried.

Adjournment followed.

—JKMS—

MODERN TREND IN DEEP X-RAY THERAPY WITH PARTICULAR REFERENCE TO HIGHER VOLTAGES

(Continued from Page 363)

13. Duffy, James J., McNattin, Robt. F., Copeland, Murray M., and Quimby, Edith H., The Relative Effects Produced by 200 KV Roentgen Rays, 700 KV Roentgen Rays and Gamma Rays: Comparison Based on the Production of Erythema in Human Skin. Am. J. Roentgen. & Rad. Therapy. 1933, 29, 343.

14. Mudd, Seeley G., Emery, Clyde K., Meland, Orville M., and Costolow, Wm. E. Data Concerning three years Experience With 600 KV (peak) Roentgen Therapy. Am. J. Roentgenol & Rad. Therapy 1934, 31, 520.

15. Lauritsen, Charles C., Energy Considerations in High Voltage Therapy. Am. J. Roentgenol. & Rad. Therapy, 1933, 30, 380.

(b) Lauritsen, Charles C., Energy Considerations In Medium and High Voltage Therapy. Am. J. Roentgenol. & Rad. Therapy, 1933, 30, 529.

(c) Lauritsen, Charles C., On the Relation Between the Roentgen and the Erythema Dose. Am. J. Roentgenol. & Rad. Therapy, Feb. 1935, 33, 235.

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NEWS NOTES

INTERNATIONAL COMPENSATION MEETING

G. Clay Baker, chairman, Commission of Labor and Industry, and also president, International Association of Industrial Accident Boards and Commissions, has recently announced the following medical program which will be presented at the convention of the latter group to be held at the Jayhawk Hotel, Topeka, September 21-24:

Tuesday, September 22, 9:00 a. m.

Injection Method Treatment of Hernia, by Dr. Andrew J. Weber; Tuberculosis and its Relation to Trauma, by Dr. Jacob A. Goldberg; Measurement of Disabilities under Schedules of Various Acts, by D. D. Garcelon.

2:00 p. m.

Rating Eye Disabilities, by a representative of the American Medical Association.

Wednesday, September 23:

9:45 a. m.

Address, Hon. G. Clay Baker, President, Topeka.
Chairman, Dr. J. F. Gsell, Wichita.

10:00 a. m.

"Pre-occupational Examinations", Dr. J. A. Britton, Chicago, Ill.
Introduced by, Dr. E. C. Duncan, Fredonia.
Discussion opened by, Dr. W. A. Phares, Wichita.

11:00 a. m.

"Prompt Reporting and Co-operation with Commissions", Hon. Voyta Wrabetz, Madison, Wis.
Introduced by, Dr. Forrest L. Loveland, Topeka.
Discussion opened by Dr. Lawrence Growney, Kansas City.
Chairman, Dr. W. F. Bowen, Topeka.

2:00 p. m.

"Low Back Pain", Dr. Philip H. Kreuscher, Chicago, Ill.
Introduced by, Dr. M. J. Owens, Kansas City, Mo.
Discussion opened by, Dr. W. H. Hines, Kansas City, Mo.

3:00 p. m.

"Knee Joint Derangements", Dr. Arthur E. Bence, Wichita.
Introduced by, Dr. L. D. Johnson, Chanute.
Discussion opened by, Dr. Rex L. Diveley, Kansas City, Mo.
Chairman, Dr. H. L. Snyder, Winfield.

4:00 p. m.

"A Practical Discussion of the Silicosis Problem," Dr. Oscar A. Sander, Milwaukee, Wis.
Introduced by, Dr. L. F. Barney, Kansas City.
Discussion opened by Dr. Earle G. Brown, Topeka.

5:00 p. m.

"Surgical Treatment of Peripheral Nerve Injuries", Dr. A. W. Adson, Rochester, Minn.
Introduced by Dr. C. C. Nesselrode, Kansas City.
Discussion opened by Dr. Frank R. Teachenor, Kansas City, Mo.

Since this is the first time in the twenty-three years of the convention proceedings of this organization that a special program has been provided for the medical

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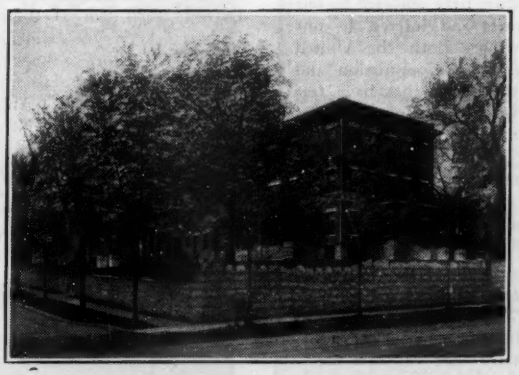

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profession. Mr. Baker is particularly hopeful that the meeting will be well attended by Kansas physicians.

BASIC SCIENCE BROCHURE

The Committee on Public Policy is at present preparing a brochure on basic science laws which it hopes to have available for lay distribution within the near future.

Present plans provide that the pamphlet will include a description of the basic sciences, basic science laws, invalid objections that are made against these laws, and the need of legislation of this kind in Kansas.

WPA TRAUMATIC INJURIES

The central office has received the following communication from Mr. J. J. Poizner, State Compensation Officer of the Kansas WPA:

"I wish to express on behalf of the Kansas WPA and Mr. Evan Griffith, State Administrator, our sincere appreciation for the wholehearted cooperation the Kansas medical profession has given our traumatic injury program which has recently completed its first year of operation. The free choice of physician plan included therein has proven to be satisfactory from every standpoint and we wish to commend the foresight of the officials of The Kansas Medical Society for their suggestion in this regard. We have also greatly appreciated the efficient service your members have rendered to our employees and their fairness and interest in our problems in this connection. Both the United States Employees Compensation Commission and ourselves have regretted the delays that have frequently been necessary in the payment of physicians accounts and we hope that all of your members realize that this has been unavoidable through the vast amount of additional work that the Commission has experienced.

"We believe you might be interested in the following statistics which relate to injury cases during the past year:

For the fiscal year ending June 30, 1936, there was a total of 2533 traumatic injury cases in Kansas which required medical attention and it is estimated that vouchers for medical and hospital care for these patients amounted to $40,000.00.

"There is only one suggestion we could make for the further handling of this program during the coming year: The Commission frequently advises us that physicians have inadvertently forwarded voucher form S69 directly to that office. This procedure occasions a delay inasmuch as the form must be returned for handling through regular channels and we would thus appreciate it very much if all physicians would make certain that these forms are returned directly to the person issuing the authorization or to the WPA office in that district.

Assuring you of our desire to cooperate with your good organization in any way possible."

NATIONAL HEALTH SERVICE

Information has been received that a concern calling itself the National Health Service of Wichita, and promoted by Mr. Leroy G. Mason and Mr. Clark G. Dumond, is planning to institute a pre-payment health service in various parts of the state. Also, that representatives of this company are at present calling upon various county medical societies and members in an effort to secure their interest in the undertaking.

Although a full description of this concerns' plan of operation has not as yet been obtained, several plans believed to be similar in scope have recently been stopped by the Attorney General and the State Department of Insurance, through reason that they violated the Kansas Insurance Code.

Representatives of the Society are at present investigating the above company and a request is made that all county medical societies and members refer representatives of the concern to the central office.

KANSAS CITY SOUTHWEST CLINICAL SOCIETY MEETING

Guest speakers at the Fourteenth Annual Fall Conference of the Kansas City Southwest Clinical Society to be held at the Municipal Auditorium in Kansas City, Missouri, on October 5, 6, 7, 8, are as follows: Dr. George E. Bennett, Baltimore, Md.; Dr. Milton A. Bridges, New York City; Dr. Joseph A. Capps, Chicago, Ill.; Dr. George Crile, Cleveland, Ohio; Dr. Morris Fishbein, Chicago, Ill.; Dr. A. C. Furstenberg, Ann Arbor, Mich.; Dr. Urban Maes, New Orleans, La.; Dr. J. A. Myers, Minneapolis, Minn.; Dr. Jean Paul Pratt, Detroit, Mich.; Dr. B. Weems Turner, Houston, Texas; Dr. Derrick T. Vail, Cincinnati, Ohio.

The following members of The Kansas Medical Society will also appear on the program: Dr. Thomas G. Orr, Dr. Lewis W. Angle, Dr. Fred Angle, Dr. O. W. Davidson, Dr. C. C. Nesselrode, Dr. Ralph H. Major, Dr. P. M. Krall, and Dr. T. G. Dillon.

The usual events of this meeting, including Round Table Luncheons, a public meeting, the regular fall meeting of the Kansas City Society of Ophthalmology and Otolaryngology, scientific and commercial exhibits, and social entertainment, have also been arranged.

Further details may be obtained from the August issue of the Bulletin of the Kansas City Southwest Clinical Society.

PRIMARY RESULTS

Returns from the recent primary election indicate that the following Kansas physicians were successful in candidacies for state representative and state senator: Dr. J. B. Carter, Wilson, senator; Dr. T. C. Kimble, Miltonvale, representative; Dr. Alfred O'Donnell, Ellsworth, representative; Dr. R. L. Von Treba, Chetopa, representative.

OKLAHOMA CITY CLINICAL SOCIETY

The Seventh Annual Fall Conference of the Oklahoma City Clinical Society will be held in Oklahoma City, Oklahoma, on October 26, 27, 28, 29.

The guest speakers present will be: Dr. Charles

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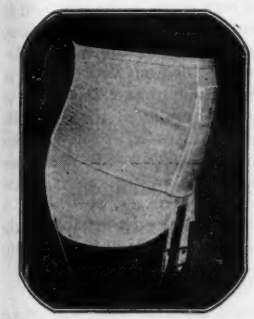

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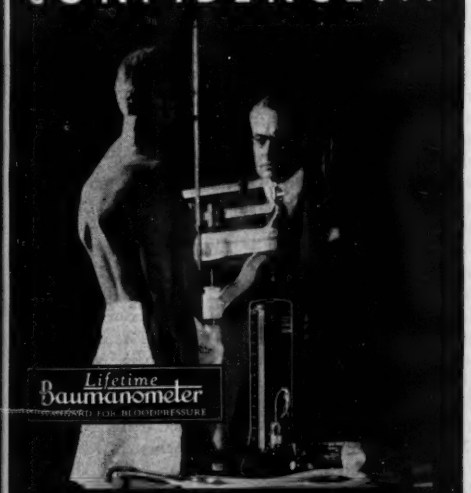

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Arch. Otolaryngology, Mar. 1936, Vol. 23, No. 3, 306-309

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The meeting will consist of general assemblies, round table luncheons, evening symposias, post-graduate courses, and commercial and scientific exhibits.

Further information may be secured from the Secretary, 714 Medical Arts Building, Oklahoma City, Oklahoma.

SEDGWICK COUNTY EXHIBIT

The Sedgwick County Medical Society has announced that it will sponsor an exhibit portraying the advancement of medical science at the Kansas Diamond Jubilee Exposition to be held in Wichita, October 7-17. Since several hundred thousand people are expected to attend, the above activity should prove to be of exceptional interest.

POSTGRADUATE COURSES

The second series of obstetric and pediatric postgraduate lectures, sponsored by the Kansas State Board of Health in conjunction with the Society Committee on Maternal and Child Welfare and financed through Social Security Act funds, was completed on August 21.

This particular course was held for the area comprising north central Kansas and included Dr. L. A. Calkins, professor of obstetrics at the University of Kansas School of Medicine, and Dr. Lucius Eckles, a pediatrician of Topeka, as speakers. Current reports indicate that attendance was excellent and that all members were greatly interested in the course.

Final registration figures for a similar course presented in central Kansas during June and July by Dr. Frank C. Neff and Dr. E. D. Plass, show that 108 of 199 physicians in that area registered and attended.

It is hoped that the success attained in these two courses will permit similar activities to be offered in other parts of the state within the near future.

INTERNATIONAL MEDICAL ASSEMBLY

The twenty-first International Assembly of the Inter-State Post-graduate Medical Association of North America, under the presidency of Dr. David Riesman of Philadelphia, Pennsylvania, will be held in the public auditorium of St. Paul, Minnesota, October 12, 13, 14, 15 and 16 with pre-assembly clinics on Saturday, October 10 and post-assembly clinics Sunday, October 17 in the hospitals of St. Paul.

The aim of the program committee with Dr. George Crile, as chairman, is to provide for the medical profession of North America an intensive postgraduate course covering the various branches of medical science. The program has been carefully arranged to meet the demands of the general practitioner, as well as the specialist. Extreme care has been given in the selections of the contributors and the subjects of their contributions.

In cooperation with the Minnesota State Medical Association, the Ramsey County Medical Society will be host to the Assembly and has arranged an excellent list of committees who will function throughout the Assembly.

A most hearty invitation is extended to all members of the profession who are in good standing in their State or Provincial Societies to be present and enjoy the hospitality of the medical profession of St. Paul. A registration feee of $5.00 will admit each member of the medical profession in good standing to all the scientific and clinical sessions.

Special railroad rates will be in effect.

A list of the distinguished speakers who will appear on the program is as follows: Dr. Irvin Abell, Louisville, Ky.; Dr. Alfred W. Adson, Rochester, Minn.; Dr. W. Wayne Babcock, Philadelphia, Pa.; Dr. Donald C. Balfour, Rochester, Minn.; Dr. Claude S. Beck, Cleveland, Ohio; Dr. Earl Bond, Philadelphia, Pa.; Dr. Frederick A. Coller, Ann Arbor; Dr. Hugh Cabot, Rochester, Minn.; Dr. Robert A. Cooke, New York, N. Y.; Dr. George W. Crile, Cleveland, Ohio; Dr. Bronson Crothers, Boston, Mass.; Dr. Elliott C. Cutler, Boston, Mass.; Dr. Irving S. Cutter, Chicago, Ill.; Dr. Walter E. Dandy, Baltimore, Md.; Dr. Walter T. Dannreuther, New York, N. Y.; Dr. Vernon C. David, Chicago, Ill.; Dr. Loyal Davis, Chicago, Ill.; Dr. Robert S. Dinsmore, Cleveland, Ohio; Dr. George Draper, New York, N. Y.; Dr. Wells P. Eagleton, Newark, N. J.; Dr. Carry Eggleston, New York, N. Y.; Dr. Eldridge L. Eliason, Philadelphia, Pa.; Dr. Charles A. Elliott, Chicago, Ill.; Dr. John F. Erdmann, New York, N. Y.; Dr. Matthew S. Ersner, Philadelphia, Pa.; Dr. Reginald Fitz, Boston, Mass.; Dr. A. Almon Fletcher, Toronto, Canada; Dr. John R. Fraser, Montreal, Canada; Dr. John F. Fulton, New Haven, Conn.; Dr. Francis C. Grant, Philadelphia, Pa.; Fraser B. Gurd, Montreal, Canada; Dr. Russell L. Haden, Cleveland, Ohio; Dr. Charles G. Heyd, New York, N. Y.; Dr. Andrew C. Ivy, Chicago, Ill.; Dr. Chevalier Jackson, Philadelphia, Pa.; Dr. Elliott P. Joslin, Boston, Mass.; Dr. Frederick J. Kalteyer, Philadelphia, Pa.; Dr. Frank H. Lahey, Boston, Mass.; Dr. Joseph W. Larimore, St. Louis, Mo.; Dr. Samuel Z. Levine, New York, N. Y.; Dr. Dean Lewis, Baltimore Md.; Dr. Jennings C. Litzenberg, Minneapolis, Minn.; Dr. Warfield T. Longcope, Baltimore, Md.; Dr. William E. Lower, Cleveland, Ohio; Dr. John S. Lundy, Rochester, Minn.; Dr. Joseph F. McCarthy, New York, N. Y.; Dr. Charles H. Mayo, Rochester, Minn.; Dr. William J. Mayo, Rochester, Minn.; Dr. James H. Means, Boston, Mass.; Dr. John J. Moorhead, New York, N. Y.; Dr. Herman O. Mosenthal, New York, N. Y.; Dr. Louis H. Newburgh, Ann Arbor, Mich.; Dr. Emil Novak, Baltimore, Md.; Dr. John A. Oille, Toronto, Canada; Dr. Eric Oldberg, Chicago, Ill.; Dr. George E. Pfahler, Philadelphia, Pa.; Dr. Maurice C. Pincoffs, Baltimore, Md.; Dr. Lawrence Post, St. Louis, Mo.; Dr. Fred Rankin, Lexington, Ky.; Dr. Robert F. Ridpath, Philadelphia, Pa.; Dr. David Riesman, Philadelphia, Pa.; Dr. Leonard G. Rowntree, Philadelphia,

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III. VITAMIN A

• The most characteristic evidence of severe human vitamin A deficiency, and one which is increasingly rare in this country, is xerophthalmia. Night-blindness, one of the manifestations that usually precedes xerophthalmia, has been recognized as a deficiency disease since the time of Hippocrates who described the disease, and its cure by eating liver. Infrequent reports of this disorder, however, still appear in the American literature. Most if not all of the symptoms accompanying a deficiency of vitamin A are thought to be the result of an impairment of the epithelial tissue (1). In this connection, a new method for the quantitative determination of this vitamin is based on the keratinization of germinal epithelia (2).

That vitamin A exerts an influence on the growth of human infants and children is also generally accepted.

As early as 1919, a relationship between vitamin A in plant foods and plant pigments was postulated. Research since that date has indicated that beta-carotene and some related compounds may be considered as provitamin A (3).

The vitamin A potency of fruits and vegetables is apparently due to their carotene content, since vitamin A as such has never been found in plant tissue. Ingested carotene is believed to be converted into vitamin A by enzyme action in the liver of the animal (4), in which organ the vitamin is stored.

Vitamin A in the form of carotene may be present in yellow, green or red pigmented fruits and vegetables—in the two latter cases, the yellow color of carotene being masked by other pigments present. Color alone, therefore, is not always a reliable index of potential vitamin A potency.

Both vitamin A and carotene are relatively stable to heat but are subject to destruction by oxidation. However, foods of both animal and plant origin, when canned by modern methods, have been found to retain their vitamin A potencies in high degree (5).

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(1) 1927. J. Exp. Med., *46*, 699
(2) 1935. J. Nutrition, *9*, 735
(3) 1929. Biochem. J., *23*, 803
(4) 1931. J. Biol. Chem., *94*, 185
(5) a. 1933. J. Am. Diet. Assoc., *9*, 295
b. 1931. J. Nutrition, *4*, 267
c. 1935. Am. J. Pub. Health, *25*, 1340
(6) a. 1925. Ind. Eng. Chem., *17*, 69
b. 1926. Ind. Eng. Chem., *18*, 85

This is the sixteenth in a series of monthly articles, which will summarize, for your convenience, the conclusions about canned foods which authorities in nutritional research have reached. We want to make this series valuable to you, and so we ask your help. Will you tell us on a post card addressed to the American Can Company, New York, N. Y., what phases of canned foods knowledge are of greatest interest to you? Your suggestions will determine the subject matter of future articles.

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Foreign acceptances to date:

Dr. Robert D. Lawrence, F.R.C.P., London, England; Mr. Archibald H. McIndoe, F.R.C.S., London, England; Mr. C. Naunton Morgan, F.R.C.S., London, England; Dr. Francis J. Charteris, Prof. of Materia Medica, St. Andrews University, St. Andrews, Scotland.

Further information may be obtained from Dr. W. B. Peck, Managing Director, Freeport, Illinois

ROTARY PROGRAM

The Kansas City Kansas Rotary Club dedicated its meeting on August 11 to the medical profession and the following physicians and subjects were presented: Dr. H. R. Wahl, "Medical Education"; Dr. J. F. Hassig, "Medical Ethics."; Dr. C. C. Nesselrode, "Medical Organizations and Their Functions"; Dr. T. J. Sims, "Our Medical Law"; Dr. W. J. Feehan, "Basic Science Law"; and Dr. C. J. Mullen, "Socialized Medicine".

Each of the talks was five minutes in length, Dr. C. Omer West, president of the club presided and introduced the speakers, and a large amount of interest was evidenced.

MORBIDITY REPORT

New communicable disease cases in the state as compared with last month are reported by the Kansas State Board of Health as follows:

Disease	Month ending August 22	Month ending July 25
Scarlet Fever	164	269
Gonorrhea	72	119
Syphilis	66	111
Pneumonia	55	235
Tuberculosis	55	192
Mumps	45	59
Whooping Cough	37	114
Typhoid Fever	31	18
Diphtheria	22	24
Measles	9	35
Vincent's Angina	9	7
Undulant Fever	7	17
Erysipelas	5	17
Septic Sore Throat	5	5
Encephalitis	5	2
Chickenpox	4	43
German Measles	4	11
Meningitis	4	3
Cancer	3	14
Poliomyelitis	2	5
Smallpox	1	18
Influenza	1	16

COUNTY SOCIETIES

The Central Kansas and Cloud County Medical Societies held dinner-meetings on July 28 and July 31 at Ellsworth and Concordia, respectively. Both meetings preceded Social Security Act postgraduate programs held on these dates at those towns.

Dr. Philip W. Morgan, Emporia, spoke on "Electrocardiography and Bradycardia" at a meeting of the Douglas County Medical Society held in Lawrence on August 13. The talk was followed by a discussion by Dr. F. L. Loveland, Topeka.

Members of the Saline County Medical Society and the Salina Dental Society held a joint meeting on July 30 at Dr. W. E. Mowery's cabin north of Salina. The proposed Basic Science Law was discussed and decision was made to inform all representatives and senators as to the stand of the two professions on the proposed law.

The Wyandotte County Medical Society held a meeting on September 1 in Kansas City with the following speakers and subjects: Dr. H. R. Wahl, "Pathological Conference;" Dr. H. W. King, "Malignancy of the Colon"; Dr. H. L. Regier, "Emergency Care Following Accidents."

MEMBERS

Dr. Lynn Beal, Fredonia, has been appointed county health officer for Wilson County to succeed Dr. W. H. Young who died recently.

Dr. R. R. Nykamp, formerly of Michigan, has located in Peabody where he will be associated with Dr. E. H. Johnson. He received his medical training from Rush Medical College and served his internship at the Swedish Covenant Hospital in Chicago.

The Kansas Motor Club recently conferred a title of "safest automobile driver in Kansas" upon Dr. L. M. Tomlinson, Harveyville, by reason of his record of having driven more than 250,000 miles in twenty-two years without an accident or traffic violation. Through this distinction Dr. Tomlinson was guest of honor at the Kansas Safety Day held in Topeka on August 14, and he also represented Kansas in the first National Safe Drivers' motorcade to New York City, sponsored by the American Automobile Association, during the week of August 31.

Dr. C. H. Warfield, who for the past eight years has been Director of the Department of Roentgenology, Cook County Hospital, Chicago, Illinois, opened an office in Wichita, on September 1, 1936, for the practice of roentgenology. While at Cook County Hospital, Dr. Warfield was an assistant professor of medicine at Loyola University Medical School, and Chairman of the Department of Roentgenology, Cook County Graduate School of Medicine. Dr. Warfield graduated from Northwestern University Medical School in 1925. He interned at Wesley Memorial Hospital in Chicago and from 1926 to 1928 was resident roentgenologist, University of Michigan Hospital. He is a fellow of the American Medical Association and a diplomate of the American Board of Radiology. Dr. Warfield has written several articles upon original radiological research, one of which was read at The Kansas Medical Society meeting, 1935, and published in the

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March 1936 issue of The Journal of The Kansas Medical Society. Dr. Warfield should make a welcome addition to Sedgwick County and Kansas medical societies.

DEATH NOTICES

Dr. William Moorman Boone, 76 years of age, died at his home in Highland on August 6. He was born in Meade County, Kentucky, in 1869 and had lived during his youth at Dallas, Texas, and at Agency, Missouri. He attended the College of Physicians and Surgeons at Baltimore, Maryland, where he graduated in 1891. He practiced a few months following his graduation and located in Highland during 1892 where he continued to practice until his death. He was a former member of the Doniphan County Medical Society.

Dr. T. R. Hyatt, 79 years of age, died at his home in Topeka on August 27. Dr. Hyatt was born on May 31, 1857, near Cincinnati, Ohio, and moved to Kansas in 1881. He was employed by the Santa Fe Railroad for twenty-one years and later attended the Kansas Medical College in Topeka from which he graduated in 1905. He continued his practice in Topeka until the time of his death. He was a member of the Shawnee County Medical Society.

Dr. Howard Earl Marchbanks, 48 years of age, died in Pittsburg on August 7 from an attack of coronary occlusion. Dr. Marchbanks was born at Scammon in 1888 and attended high school at Columbus. He received his pre-medical training at the University of Kansas and also was a graduate of the University of Kansas Medical School in 1916. He served his internship at Bell Memorial Hospital in Rosedale and commenced practice in Pittsburg immediately following. He was a first lieutenant in the medical corps of the 218th engineers during the World War and was stationed in the Army Medical School in Washington, D. C., and at Camp Travis, Texas. He was a member of the Crawford County Medical Society and had held several official positions in The Kansas Medical Society.

Dr. F. K. Meade, 61 years of age, died following a heart attack at his home in Hays on August 2. Dr. Meade was born on February 25, 1875 at Sigourney, Iowa, and was a graduate of the Rush Medical College in 1902. Following his graduation he practiced eight years in Rooks County and subsequently moved to Hays where he practiced until his death. He was a member of the Central Kansas Medical Society and had served that organization in many official capacities.

Dr. J. A. H. Webb, 59 years of age, died at his home in Wichita on August 5. He was born in East Smithville, Pennsylvania, in 1877 and during his early years moved to Stafford with his parents. He received his medical training at the Kansas Medical College in Topeka from which he graduated in 1898. Following his graduation he practiced in Stafford and Preston for a number of years. He served as a major in the medical corps during the World War at Camp Taylor, Kentucky, Fort McPherson, Georgia, and Base Hospital No. 61 in France. He located in Wichita during 1919 where he specialized in radiology. He was a member of the Sedgwick County Medical Society.

Dr. William H. Young, 63 years of age, died at his home in Fredonia, on August 13. He was born in Illinois in 1873 and moved to New Albany in 1875. He attended the public schools there and attended college at Fort Scott and Great Bend. He taught school in Wilson County for a number of years and attended the Eclectic Medical College, in Kansas City, Missouri, from which he graduated in 1904. He had practiced in Fredonia since 1907. Dr. Young served as county health officer of Wilson County for eighteen years and had held many official positions in the Wilson County Medical Society.

NEW BOOKS RECEIVED

CHEMICAL PROCEDURES FOR CLINICAL LABORATORIES—By Marjorie R. Mattice, A. B., assistant professor of clinical pathology, New York Post Graduate Medical School of Columbia University. Published by Lea & Febiger, Philadelphia, at $6.50 per copy.

ARTHRITIS AND RHEUMATIC DISEASE—By Dr. Maurice F. Lautman, consultant to the United States Public Health Service Clinic and Director of the Department for the Study of Arthritis, Levi Memorial Hospital, Hot Springs, Arkansas; foreword by Dr. Morris Fishbein, Editor, Journal of the American Medical Association. Published by Whittlesey House, McGraw-Hill Book Company, Inc., New York, at $2.00 per copy.

MEDICINE AND MANKIND—Dr. Iago Galdston, executive secretary, New York Academy of Medicine. Published by the D. Appleton-Century Company, New York, at $2.00 per copy.

RECENT ADVANCES IN GENITO-URINARY SURGERY—By Hamilton Bailey, F. R. C. S., (England) surgeon, Royal Northern Hospital; and Norman M. Matheson, F. R. C. S., surgeon Central Middlesex County Hospital. Published by P. Blakiston's Son & Company, Incorporated, Philadelphia, at $5.00 per copy.

HEART DISEASE AND TUBERCULOSIS—By Dr. S. Adolphus Knofp, New York University and Paris, Published by The Livingston Press, New York, at $1.25 per copy.

BOOK REVIEWS

CLINICAL LABORATORY METHODS AND DIAGNOSIS. R. B. H. Gradwohl, M.D. Published by The C. V. Mosby Co., St. Louis. 981 pages, 328 illustrations, and twenty-four color plates.

Although the author has written this massive work to "help the clinician, the laboratory worker, and the medical student to learn laboratory diagnosis," it will probably find its way into the shelves of more laboratories than physicians. The physician who wishes to keep up with laboratory work, or to perform for himself some of the less time consuming procedures as diagnostic aids, will find more assistance in any of the excellent books on clinical interpretations of laboratory findings which

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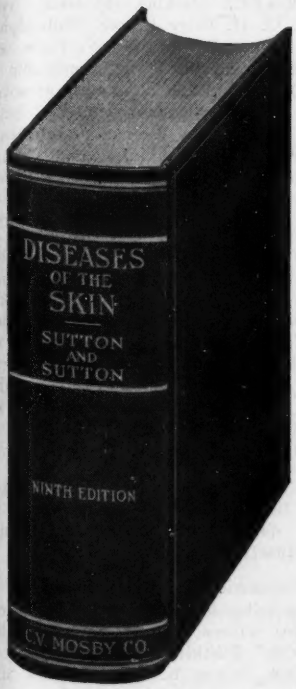

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Virginia Medical Monthly—
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Minnesota Medicine—
"Sutton's volume on dermatology which first appeared in 1916 has been accepted as one of the best standard texts on the subject. The present volume is a large volume of 1,433 pages, and is especially valuable on account of the abundance and excellence of the photographs."

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"The commanding place of this work among the standard texts in English on skin diseases is made even more secure by this fine edition."

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The C. V. Mosby Company—Publishers—3523 Pine Blvd.—St. Louis, U. S. A.

have appeared recently or in the more tresely written handbooks of laboratory technic.

For those who find their primary interest in the laboratory, however, the book holds much of value. The chapters on hematology and serology are well written, particularly from a theoretical standpoint, but there are many statements which may be taken cum grano salis when the author insists on the paramount importance of his own work in the field, or impairs too frequently the scientific spirit with the intrusion of the personal pronoun "I." Although the technic of the Kline and Kahn tests for syphilis are given, there is no theoretical discussion, and flocculation tests in general are dismissed with one short and rather contemptuous paragraph.

The sections on bacteriology, basal metabolism, examination of excreta, puncture fluids, and gastric contents are adequate, and the material covering preservation of museum specimens and the preparation of material for histo-pathologic examination is especially valuable. Postmortem examinations are treated exhaustively, and a few important toxicologic procedures are included.

The chapter on Blood Chemistry outlines the more important technics and clinical interpretations, but might well be expanded to include a few of the more recent methods, even under the necessity of abbreviating some of the more prolix passages under hematology and postmortem examinations.

The many illustrations and well designed color plates add much to the volume. There are numerous references to original papers, and a very satisfactory index.

J. L. Lattimore, M.D.

LABORATORY METHODS OF THE UNITED STATES ARMY. Edited by Major J. S. Simmons, M.D., and Major C. J. Gentzkow, M.D. Published by Lea and Febiger, Philadelphia. 1055 pages. Price $6.50.

This volume, presented as the fourth edition of the "Army Manual," whose third edition, published under Colonel C. F. Craig, is widely and favorably known, is nevertheless so completely revised and rewritten by some twenty collaborating contributors as to be almost an entirely new work on the subject.

Intended primarily as a Laboratory Manual for the Army diagnostic laboratories and as a teaching manual for the Army Medical School, it is still of sufficient scope to make its use well worth while in civil laboratories and schools.

The chapter on "Hormonal Tests for Pregnancy," by Major Hugh W. Mahon is particularly to be commended as a valuable addition to the general literature on the subject, and might well be read with profit by anyone engaged in making the tests or by any doctor who has occasion to have the test run on his patients. The section on chemistry includes many subjects not ordinarily presented in a work of this kind, all of which are treated, if not exhaustively, at least adequately for the performance of such tests as may be indicated.

Of especial interest to those engaged in work requiring statistical interpretation, as in the preparation of vital statistics, death rates, etc., is the last section, which deals with "Statistical Methods."

The book is illustrated with engravings and contains many charts, graphs, and tables which serve to clarify the text. There is an excellent index.

J. L. Lattimore, M.D.

ANNOUNCEMENTS

The American Board of Internal Medicine completed its organization on June 15, 1936. Dr. Walter L. Bierring, Des Moines, Iowa, was elected as chairman; Dr. Jonathan C. Meakins, Montreal, vice-chairman, and Dr. O. H. Perry Pepper, Philadelphia, secretary-treasurer. The above named officers and the following members constitute the membership of the board: Dr. David P. Barr, St. Louis, Missouri; Dr. Reginal Fitz, Boston, Massachusetts; Dr. Ernest E. Irons, Chicago, Illinois; Dr. William S. Middleton, Madison, Wisconsin; Dr. John H. Musser, New Orleans, Louisiana; Dr. G. Gill Richards, Salt Lake City, Michigan.

The organization of the board is the result of efforts on the part of the American College of Physicians in conjunction with the Section on Practice of Medicine of the American Medical Association, and these two organizations are represented in the membership of the board. The board has previously received the official approval of the two bodies fostering its organization as well as that of the Advisory Board of Medical Specialties and the Council on Medical Education and Hospitals of the American Medical Association.

The purpose of the board will be the certification of specialists in the field of internal medicine and the establishment of qualifications with the required examination procedure for such certification.

The fee for examination is forty dollars, and an additional fee of ten dollars is required upon issuance of a certificate. The first written examination will be held in December, 1936. Further information may be obtained through Dr. Walter L. Bierring, 406 Sixth Avenue, Des Moines, Iowa.

—JKMS—

The next examinations for entrance to the Medical Corps of the United States Navy will be held in December, 1936, and June, 1937, at the following places: United States Naval Hospital, Great Lakes, Illinois; United States Naval Medical School, Washington, D. C.; United States Naval Hospital, Mare Island, California. For further information or for a copy of the circular describing the qualifications for application, write R. Hayden, Captain (MC), U. S. Navy, District Medical Officer, Great Lakes, Illinois.

—JKMS—

The second annual meeting of the Mississippi Valley Medical Society will be held at the Burlington Hotel in Burlington, Iowa, on September 30, October 1-2, 1936. More than sixty lectures by prominent speakers will be presented at morning, afternoon, and evening sessions. All physicians are invited to attend. A detailed copy of the program may be obtained from Dr. Harold Swanberg, Secretary-Treasurer, 211-224 W. C. U. Building, Quincy, Illinois.

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AUXILIARY

Edited by Mrs. W. G. Emery, Press Publicity Chairman

PRESIDENT'S MESSAGE

Dear Auxiliary Members:

Vacation time is over. I hope everyone has had a fine rest and is ready for work.

As we enter into the season of our greatset activity, may we go forth armed with real medical auxiliary objectives. There are always new possibilities of service and new challenges to a new executive. I hope that you will cooperate with me in helping me to find new fields of endeavor.

The heart of every auxiliary member was saddened by the recent passing away of Dr. W. H. Young of Fredonia. He was the husband of our Recording Secretary.

On behalf of the members of The Kansas Medical Auxiliary, I express our deepest sympathy and affection to Mrs. Young.

The curtailing of the Auxiliary pages in July was due to a press of national and state convention material. The omission in August was occasioned by the fact that the vacation period produced no news, activities being at a standstill, state wide.

Mrs. Earl F. Clark of Belleplaine writes of a glorious vacation trip to Alaska, arriving above the arctic circle at Fort Yukon after midnight to find nobody in bed and business proceeding as in our daytime. Fairbanks, Mt. McKinley, Seward, Matanuska, Seattle, San Francisco, Los Angeles and the Grand Canyon were visited, arriving home July 28.

GETTING THINGS DONE

The President of a county Auxiliary and her two right hand workers, the Chairman of Health Education and the Program Chairman, were in conference in June.

"Well, ladies," the President said, "I have asked you to come to this conference so that we may have our plans all laid and start our work next autumn on a smooth running, interesting schedule of accomplishment."

"That sounds fine, Grace," replied the program chairman, "but it is too hot, right now, to think of accomplishing anything except surrounding a nice, long lime rickey or something else wet and cold!"

The maid entered with a tray of frosted glasses, a bowl of cracked ice and a tall pitcher of sparkling fruity liquid.

"You always say just the right thing, Alice," smiled the President. "It really requires opposition to bring out all the points. It is hot; but, if we have anything except just one more year, plans must be made and workers selected."

"You said a lot then, Grace," exclaimed the program chairman. "Getting plans carried out! Getting members to really work! I'm exhausted just thinking of it!"

The President sighed retrospectively. "Quite true, my dear," she replied. "It is the way in all societies. A few must carry the burden."

"And," supplemented the program chairman, "those few are always accused of wanting to run things their way! As though we wouldn't be only too glad to shift the responsibility and work to other shoulders!"

"Yes," contributed the chairman of health education, "but you never meet opposition from those kittens at elections nor receive a sincere constructive suggestion!"

"I wonder," mused the President, "if the debate of a resolution to the effect that it is the sentiment of our County Auxiliary that the few members of the Medical Society who fought so long and valiantly to oust Brinkley from practice in Kansas, a sacrifice of time and money, be reimbursed for their monetary losses by the other members of the Medical Society would not be educational to our ladies? You see, those men received little or nothing ($3.00 a day part of the time,) bore their own expenses, absented themselves from their practice, all through a sense of duty to public and profession. Yet all medical men rejoiced in their victory and participated in the credit thereof."

"Fine," exclaimed the program chairman. "I'll do that very thing. Yes, I guess all organizations have to be carried by a few—,but just wouldn't it be splendid if every wife truly realized that her husbands profession was the most important thing for her to push? Yes, and equally splendid if every doctor would realize that his wife can help. Just wouldn't the State Auxiliary go places!"

The President smiled, "And now that we are all enthused let's get down to work," she said.

The above was contributed by a doctor who is a close observer and has a great deal of interest in the medical Auxiliary.

Members of the Wilson County Auxiliary and County Medical Society were entertained by Dr. and Mrs. B. R. Riley in Benedict on June 8. Following the dinner the respective groups held business meetings. Mrs. E. C. Duncan, outgoing president, had charge of the meeting. Reports were given concerning the state meeting in Kansas City, Kansas. About fourteen members attended the dinner and meeting.

An Auxiliary Member Should Know That—

A Medical Auxiliary serves the Medical Profession and through it the public. Such service is very satisfactory, as it is unselfish.

An Auxiliary is always organized with permission of the Medical Society and should have an Advisor or Advisory Committee to direct it. The Auxiliary should give an annual report to its Society and undertake no new project without approval.

The principal functions of an Auxiliary are: Health education, public relations, legislation (reserve force), philanthropy, social.

The laity requires health education, but it should be given through the Medical Profession, so there may be rational control of what the public does and thinks in medical health activities. A most important objective of the Auxiliary is to direct public thinking and activity in channels the profession desires and to extend authentic information on health. We only support an organization

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when we are a member and when we understand the tasks and objectives and how to accomplish them. An Auxiliary member therefore should attend as many meetings as possible so she may—

1. Understand the purposes and objectives of the Auxiliary.
2. Receive instructions in the particular charge given her by local, state, national and know why assigned.
3. Understand how to fulfill that charge.
4. Become informed about:
   a. personal and community hygiene
   b. administration of local, state, national health
   c. medical and health laws, local, state, national
   d. the health of her community
   e. communicable diseases; their control and prevention
   f. her health in relation to her family, her community
   g. the general problems of health all should know
   h. approved educational material and where to obtain it
   i. the development of the Medical Arts
   j. why the A. M. A. urges the promotion of Hygeia; how done
   k. what legislation the Medical Society sponsors; why; how the Auxiliary acts as a reserve force; what the individual member may do
   l. philanthropic work related to the Medical Profession; what her Auxiliary is doing and why.

How Does A Member Support Her Auxiliary?

By — 1. paying her dues
2. attending meetings
3. accepting offices, chairmanships in other organizations, especially those related to health, so informed speakers may address them; so approved material may be distributed; so programs and projects undertaken be scientifically sound; so information that the profession wishes to place, may be given promptly
4. keep informed about medical matters and health activities in other organizations and report unwise and unacceptable ones to the Advisors
5. promote good fellowship by affability at meetings and attend entertainments, conventions; assist at them as requested
6. by fulfilling the charge given them; not necessarily all of it, but as much as she is able. It is not necessary to partake of every phase to be a good member

The busy wife is an asset to the Auxiliary if she is an informed member, because she has many opportunities to carry the aims and decisions of the Medical Profession and keep health leadership where it belongs. As a member, she may speak with authority and receive respect and attentions that will be missing as an unattached doctor's wife. She will know when to keep quiet and merely report to the Advisors, or Auxiliary President, and she will know when and how to answer.

The time has come when the Auxiliary has so proved its worth that the question is not, "Are you an Auxiliary member?" but "Why are you not a member?"

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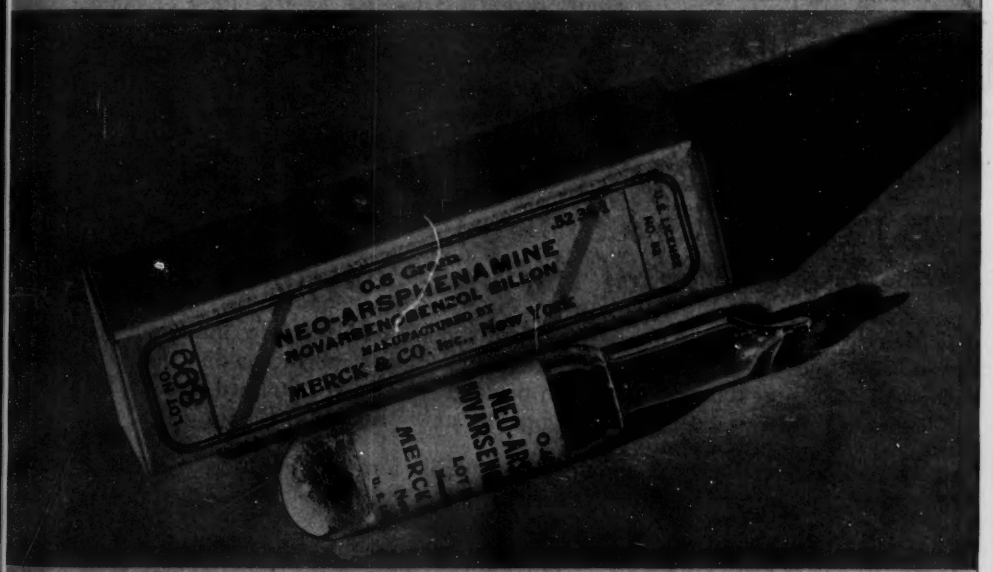

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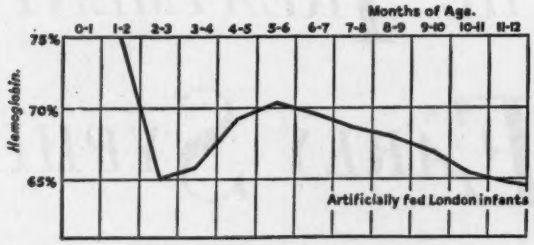

Hemoglobin level in the blood of infants of various ages. Note fall in hemoglobin, which is closely parallel to that of diminishing iron reserve in liver of average infant. Chart adapted from Mackay. It is possible to increase significantly the iron intake of the bottle-fed from birth by feeding Dextri-Maltose With Vitamin B in the milk formula. After the third month Pablum offers substantial amounts of iron for both breast- and bottle-fed babies.

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[1-10] Bibliography on request.

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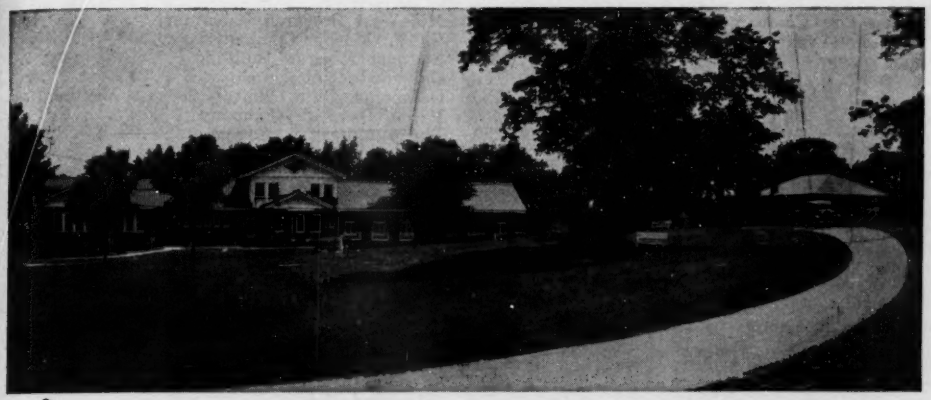

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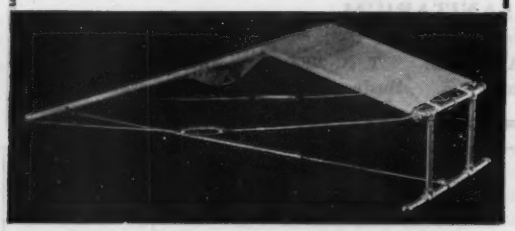

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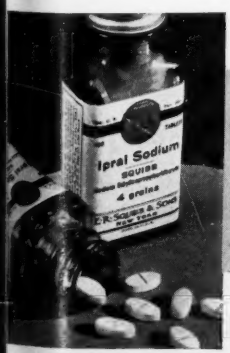

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